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The ATARI® Resource

JANUARY 1986 VOLUME 4, NUMBER 9

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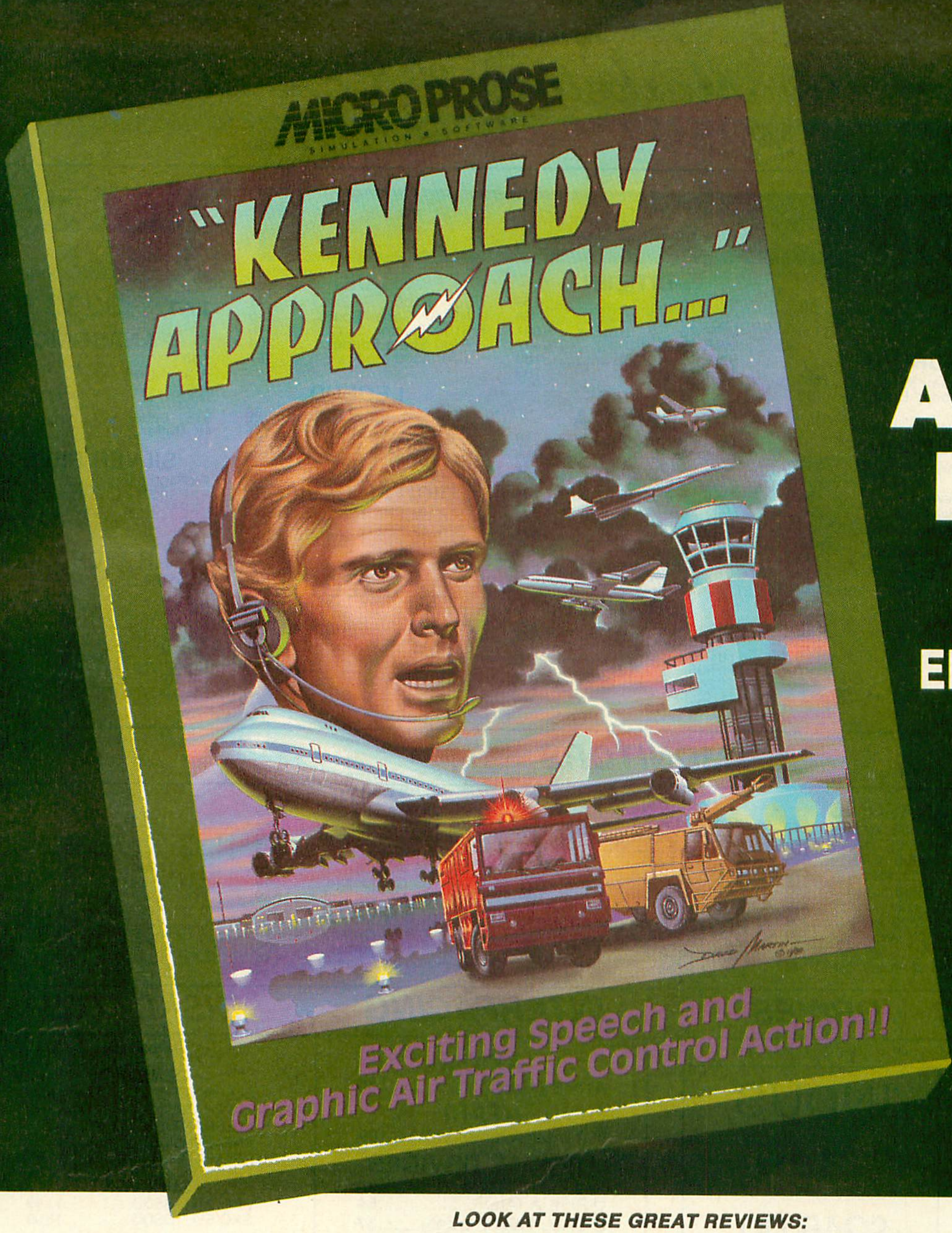
- Business
- Graphics
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- BASIC XE
- ST Software
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Bonus Reviews



INSIDE: 7 Type-In Programs

NEW simulation with SPEECH!



ARE YOU READY?

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"Kennedy Approach is an addictive gem. A fantastic speech sythesis system makes this simulation all too real!" ***Creative Computing*** *— Russ Lockwood*

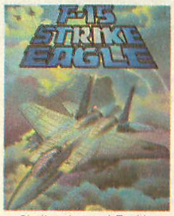


Commodore 64 Screen Picture

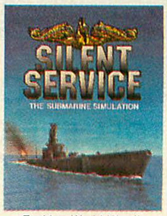
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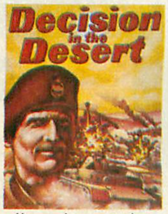
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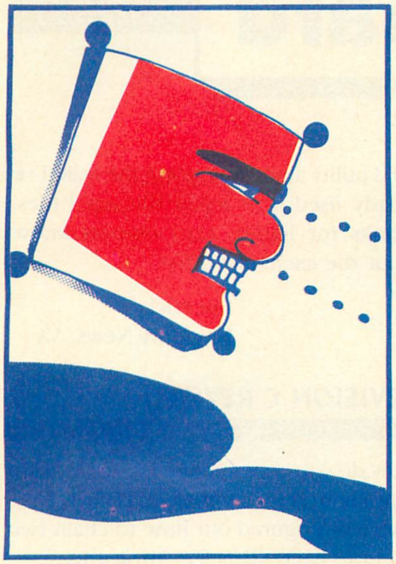


You are in command — North Africa *1940-1942*

Antic

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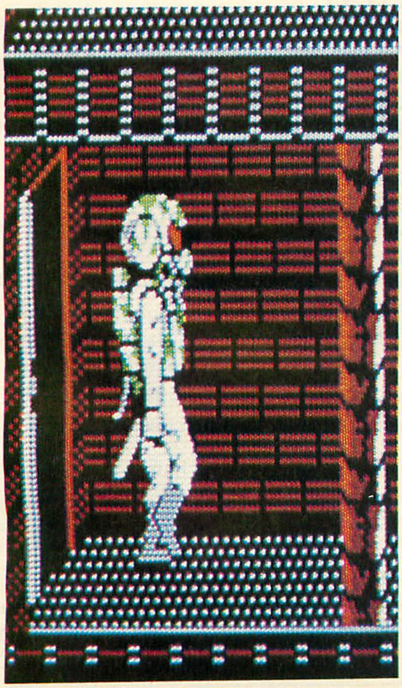
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Editorial submissions should include program listing on disk or cassette, and text file on media and paper if text was prepared with a word processor. Media will be returned if self-addressed stamped mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

i/o board

ATARI 'TOONS CONTEST

*Winners of the Atari 'Toons contest (**Antic**, August 1985) will be announced in our next issue. As stated in Help! (October 1985), the contest deadline was extended one month, due to a printer-smudged A in line 1090 of Listing 2.* —ANTIC ED.

RETURN STRIPPER

*Carriage Return Stripper (below) makes it easy to remove those excess carriage returns from downloaded files. This mini-program was graciously sent to **Antic** by Bernie Bildman, a Birmingham, Alabama oral surgeon and ubiquitous SIG * Atari personality.*—ANTIC ED

```
10 REM CARRIAGE RETURN
STRIPPER
15 REM BY BERNIE BILDMA
N WITH ADDITIONS BY GAR
Y FOSTER
60 DIM SOURCE$(15),DEST
$(15)
70 ? "↖"
80 ? "Name of source fi
le (include device)":IN
PUT SOURCE$
90 ? "Name of destinati
on file (include device
)":INPUT DEST$
100 OPEN #1,4,0,SOURCE$

110 OPEN #2,8,0,DEST$
120 TRAP 150:GET #1,A:I
F A=155 THEN 160
130 PUT #2,A
140 GOTO 120
150 PUT #2,155:END
160 GET #1,A:IF A<>155
THEN PUT #2,32:PUT #2,A
:GOTO 120
170 PUT #2,A:PUT #2,A
180 GET #1,A:IF A=155 T
HEN PUT #2,A:GOTO 180
190 GOTO 130
```

DISK SWAP

Many thanks for your article on DOS 2.5 (July, 1985). I had no idea Atari was offering a free exchange, until I read it in **Antic**. I immediately sent my DOS 3 master disk for exchange. Several weeks later, DOS 2.5 arrived (a friend told me I'd probably never see it!), packed with documentation and a $2 Fuji disk rebate offer. The DISKFIX.COM utility alone was worth the wait. I've already used it to repair damaged files. Thanks for letting Atari owners know about the exchange offer!

Bill Hicks
Newport News, VA

REVISION C REVISED

How do you boot into the BASIC Revision C program from another AUTORUN.SYS? I have not figured out how to chain two or more AUTORUN.SYS programs.

Rick Ankrum
CompuServe,
70107,1504

To chain file "MYFILE.BIN" to the end of file "AUTORUN.SYS" from DOS 2 or 2.5, type: C [RETURN] MYFILE.BIN, AUTORUN.SYS/A [RETURN].—ANTIC ED

PROWRITER 3-D

Kudos to **Antic** and Paul Chabot for Graph 3-D (October, 1985). It's one of the finest pieces of type-in software I've seen. The following changes will adapt this outstanding program to Prowriter printers:

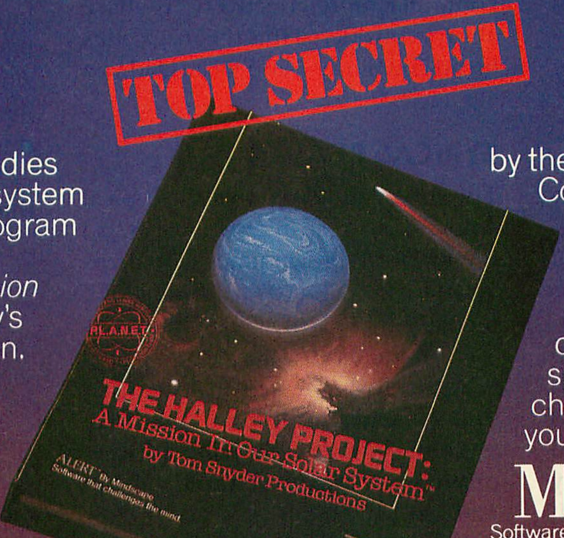
```
1 REM SUMMERSGILL I/O
960 REM PRINT IT (PROWR
ITER)
972 ? #2;CHR$(27);CHR$(
78);CHR$(27);CHR$(65)
976 ? #2;CHR$(14);" ";F
I$(3);CHR$(15)
978 ? #2;CHR$(27);CHR$(
84);"17"
980 REM
982 FOR I=1 TO 40
984 FOR J=1 TO 192:T=SA
1+(40*J)-I
990 ? #2;CHR$(27);"S019
2";B$
```

The 17 in line 978 sets paper feed increments of 1/144 of an inch (17/144, etc.). Adjusting this constant will "fine tune" the routine for your particular printer.

Richard Summersgill
San Juan Capistrano, CA

*Unfortunately **Antic** doesn't currently have a Prowriter to try out this program on.*—ANTIC ED

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editorial

You didn't *need* to be so nice. After all, your voting in the September, 1985 **Antic** survey was anonymous. We were ready to make major changes in the magazine—if there was a clear trend showing that readers wanted something new.

But from the over 400 **Antic** readers who mailed in the survey questionaire, the overwhelming response was that Antic is fine just as it is. Some readers even used the survey's additional comments space to beg **Antic** not to change.

The prevailing attitude is summed up by a comment scrawled on one survey, and echoed by many others: "The best thing about Antic is that it is a magazine strictly for Atari and delivers what readers want."

In 13 of the 20 editorial categories surveyed, a majority of Antic readers do not want any changes in the present coverage mix. Typically about 30% of the readers want more coverage of a topic, while another 20% want less—with the remaining 50% wanting coverage to stay the same.

MORE PRODUCT NEWS

We were suprised to find that 60% of you want even more product reviews and information about new products. Wasting no time complying with your wishes, this issue features extra pages of Atari product reviews.

Antic always strives to publish news of significant new Atari products. But during the past 18 months, new software only trickled in. Now the product drought finally seems to be coming to an end—much to the credit of **Antic** readers who wrote letters to software publishers after our "We Won't Take It Anymore!" editorial in May, 1985.

53% of the survey respondents want more Atari news. The old pre-Tramiel Atari was laying low towards the end, and the new Atari Corp. had little time for press relations during their year-long superhuman effort to create a new product line. Now that Atari computers are making waves in the market again, you'll see additional in-depth coverage of Atari news here (and on ANTIC ONLINE).

PRACTICAL & TUTORIAL

We weren't surprised to find that 66% of you want more type-in practical applications software. We're always searching for good practical submissions to publish. We also enjoy trying to fill reader requests to create specific application programs—especially applications that have never been available on the Atari before.

A whopping 72% asked for more utilities and tutorials. **Antic's** most popular type-in software programs are clearly those that demonstrate how to tap the power of your Atari computer more effectively. We have always considered this the magazine's bread and butter—and we're glad you agree.

TYPICAL READER

The survey indicated that the typical **Antic** reader is an intermediate (62%) BASIC (96%) programmer who owns an Atari 800XL (50%). Printers are owned by 77% of you, while 44% own modems.

We were impressed to learn that 91% of **Antic** readers are disk drive owners—despite what some software publishers have claimed about Atarians.

Another impressive statistic is that 38% of you do some programming in assembly language. The usage of other languages in the survey was much lower—Logo 15%, C 11%, ACTION! 9% and Forth 8%.

8-BIT FOREVER

Though many readers complimented the new ST section, many also expressed fears that **Antic** might desert Atari's 8-bit computer line. It's my pleasure to put an end to such fears. No way will **Antic** ever turn away from the million-plus owners of Atari 8-bit computers. You have my word on it!

What did readers think was the worst thing about **Antic**? A frequent comment was, "There isn't enough of it. It's published only once a month—I develop withdrawal symptoms after seven days." Now that's the kind of complaint we like!

Here's another pledge from **Antic**: Just because readers are happy with the way we are meeting your needs *now*, it doesn't mean we won't be ready to make rapid changes in response to any emerging needs in the changing Atari market.

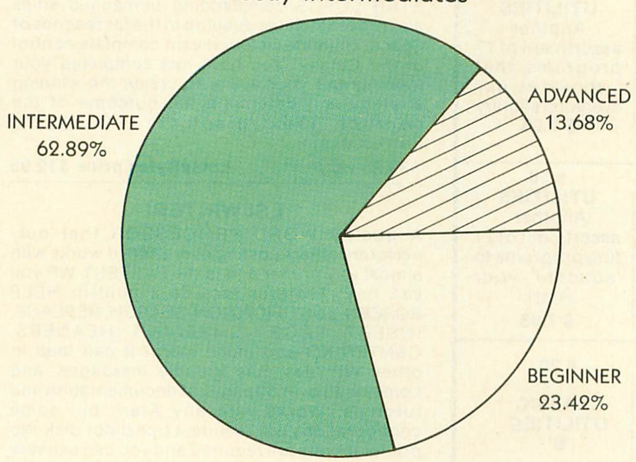
As one reader wrote, "Some say this kind of reader poll is just for marketing purposes. But the way your magazine has changed with the times, I believe you actually do care what we think."

Yes, **Antic** does care what you think.

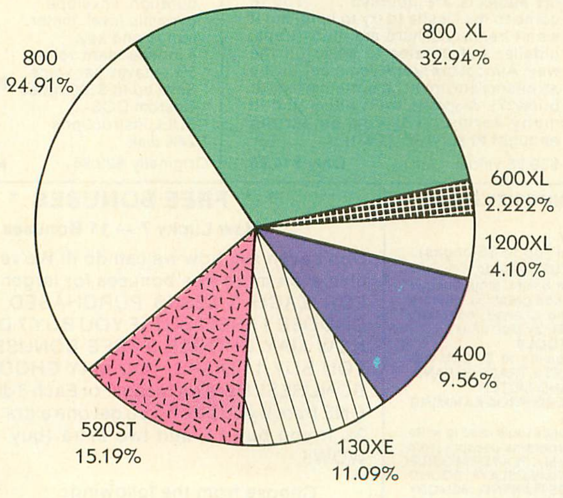
James Capparell
Publisher

editorial

EXPERIENCE LEVELS
Mostly Intermediates

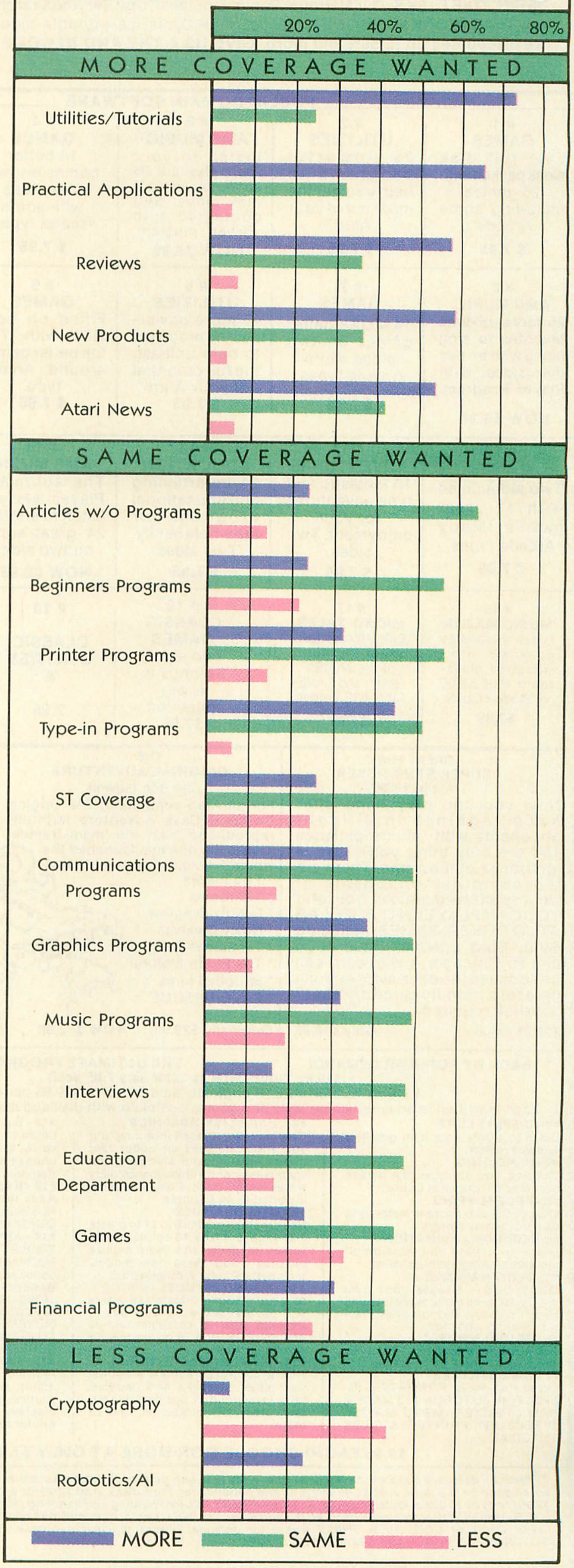


MACHINES IN USE
800XL Takes the Lead



Survey Compilation Program by
Charles Jackson
Results Compiled by ***Rebecca Hale***

ANTIC SURVEY 1985



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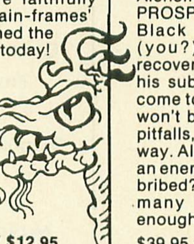
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ANTIC ONLINE ADDS NEW FEATURES

*SIG*Atari now three times bigger*

You'll see many exciting new changes when you log onto **CompuServe** in December and type GO ANTIC. To begin with, for the first time in four years SIG * Atari is expanding.

"It's like taking SIG * Atari and making it three times as big," says chief sysop Ron Luks, **Antic's** Online Editor. SIG * Atari is now split into three special interest groups—plus the ANTIC ONLINE electronic magazine. There's a SIG for 8-bit Atari computer owners, a 16-bit SIG for Atari ST users and a software developers' forum. Each of these three new SIGs has as much online space as the original SIG * Atari.

Half of the developers' forum will be open to the public. The other half will be reserved for professional software developers, authors and retailers to brainstorm and exchange ideas. For the general user, the developers forum will be an up-to-the minute source of information on new products. A special section within the developers' forum will provide technical support for the professional software tools published by the Antic Catalog.

"The old SIG * Atari was getting awfully sluggish," Luks says, "Now we can handle hundreds of calls at once." Luks hopes to offer more bonus features such as last month's SIG conference with Leonard Tramiel, Atari Corp's Vice President of Advanced Technology.

SIG * Atari's famed crew of expert associate sysops will continue online, with more people added as the need arises. Luks is no longer uploading ANTIC ONLINE or SIG * Atari onto Delphi online service.

Among the new enhancements for ANTIC ONLINE is an even more streamlined and powerful command structure. For example, it will now be easy to print out a text file on paper at 80-column width while reading it on video screen at 40-column width. Also, there will be a special private online area that can be accessed only by representatives of the Worldwide Users Network (WUN).

PRO ST HELPLINE

Another exciting new addition to ANTIC ONLINE is Professional GEM Helpline, Tim Oren's invaluable twice-monthly column for Atari ST developers.

Every two weeks, Professional GEM Helpline demonstrates amazing new tricks while guiding ST developers past pitfalls and strange bugs that lurk for the unwary.

Oren is certainly a qualified ST teacher—he designed and implemented the GEM Resource Construction Set as well as other parts of the GEM Programmer's Toolkit.

He's a former member of the GEM (Graphics Environment Manager) programming team at Digital Research, Inc. (DRI) of Monterey, CA where he also designed DR LOGO, a precursor to ST Logo.

Oren left DRI to join Activenture Corp., the start-up company founded by former DRI operating systems architecture designer Tom Rolander to develop CD ROM (Compact Disk, Read Only Memory) technology for use with the Atari ST. At Activenture, Oren designs GEM-like user interfaces, such as the search-on-disk display for the CD ROM Grolier Encyclopedia. He also currently writes a highly technical column for an IBM GEM developers users group newsletter.

Oren's ANTIC ONLINE column will initially be geared to people who have both a knowledge of the C programming language and a copy of Atari's $300 ST Programmers Toolkit with documentation. "But if you currently lack either, don't panic," he says. "You can download the programs and save them for future reference."

SIGNING UP

If you're not a CompuServe subscriber yet, see your local computer dealer or phone (800) 848-8199 for information about signing up. Ohio residents phone (614) 457-0802. There is no extra charge for accessing ANTIC ONLINE or SIG * Atari.

communications

SYSOP SANTA CLAUS

Last-minute gift help online

by SCOTT ANTHONY

Computerize your holiday gift selections with* Antic's *first two-part magazine/online program. Printed in this issue is a selector program that organizes the gift possibilities for someone on your list. The program will then search through a vast gift database available on CompuServe's SIG*Atari. The BASIC program works on 8-bit Atari computers with 48K memory and disk drive.

Sysop Santa Claus doesn't know if you've been bad or good—but he does know how to figure out what gifts you, your friends and family want for Christmas or any other festive occasion.

Now that Santa owns an Atari computer, he doesn't have to live at the chilly North Pole anymore. Rumor has it that he and Mrs. Claus are taking it easy in Tahiti with the elves and reindeer, while using a gigantic gift database and his 8-bit Atari to do all the work of gift selection.

Now you too can take it easy when selecting Christmas gifts. **Antic** uploaded Santa's gift list online to CompuServe's SIG*Atari. (You'd be typing until Easter if we printed that entire gift database as a type-in listing.)

Easy-to-follow instructions for downloading and using the database will be waiting for you on CompuServe ANTIC ONLINE. (See the ANTIC ONLINE story in this issue if you need information about how to obtain a CompuServe subscription.)

You pay only the standard connect time charges for what should be a 15-20 minute download at 300 baud. And then the program will be yours to use for many holidays, birthdays and anniversaries to come. The gift database includes all types of presents—such as neckties, bathrobes and sports equipment as well as the electronic and computer goodies.

What if you don't have a modem? You can order the gift database on disk **PD066** from the Antic Catalog for $10. Use the order form or the toll-free phone number this issue's Antic Catalog. (*Sorry, because of the magazine's production schedule deadlines it would be impossible to create an up-to-date Christmas '85 gift list in time for this issue's regular monthly Antic Disk.*—ANTIC ED).

GETTING STARTED

Type in Listing 1, SYSANTA.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This issue's type-in Gift Selector program will ask you questions about the recipient—such as favorite color, hobbies and interests, etc. Then the Gift Selector will sort through the Sysop Santa database (which you'll download, or obtain from the Antic Catalog) to find a perfect gift.

If you download the database from CompuServe, you may need to rename it GIFTS.DAT. This is the only filename that the Gift Selector program will recognize.

*Scott Anthony programmed Sysop Santa Claus on an Apple IIe for the holiday issue of **Antic's** sister publication **II Computing**. The Atari conversion was made by Bill Marquardt.*

Listing on page 97

THE CREATION OF A NEW BREED

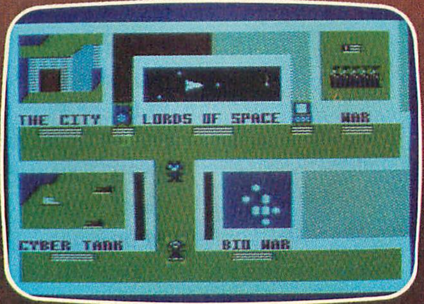


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Mapping the XL/XE

New from the author of the classic Atari guidebook

by IAN CHADWICK

There are a lot of changes in Atari Operating Systems since the original OS for the 400/800 models. Atari originally created a new OS for the ill-fated 1200XL, then modified it for the 800XL when the 1200 failed to get consumer support.

The new XE series is really just the XL in a new box. Only the 130XE has been changed. And the change is only in memory management for the additional 64K of RAM. Atari left a lot of the 1200 in the XL/XE OS—including function key management and the self-test ROM—which isn't useful to owners of the new models.

Described below are specific memory locations you can use to take advantage of special features in the newer Ataris. These are the features *not* found on the 400 or 800 models.

PEEKS & POKES

As an introduction to PEEKS and POKES, you can examine any memory location from BASIC by using a PEEK—like PRINT PEEK (17)—and placing any number between zero and 255 in any RAM location (some ROM locations too) with a POKE like POKE 708,71. The address you PEEK or POKE to can be any number between zero and 65535, but addresses higher than 40960 are taken up by BASIC and the Operating System ROM, so you can PEEK them, but not POKE most of them without some special techniques.

You can't hurt your computer by POKEing but you can crash your program or get your system locked up temporarily. Before you go POKEing about, make sure you first SAVE any program you're working on. If you get stuck, press [RESET], or re-boot your computer.

Several locations in the 400/800 OS were moved, or their functions were deleted entirely, and new uses were found for those addresses. Many previously unused (spare or reversed) bytes have been used for new or relocated OS operations. These are:

Deleted locations:

Name:	Decimal:	Hex:
PTEMP	31	$1F
LINBUF	583-622	$247-$26E
CSTAT	648	$288
TMPX1	668	$29C
HOLD5	701	$2BD
ADDCOR	782	$30E

Relocated addresses:

Name:	800 location:	Moved to:
PTIMOT	28/$1C	788/$314
PBPNT	29/$1D	734/$2DE
PBUFSZ	30/$1E	735/2DF
CRETRY	54/$36	688/$29C
DRETRY	55/$37	701/$2BD
CKEY	74/$4A	1001/$3E9
CASSBT	75/$4B	1002/$3EA
NEWROW	96/$60	757/$2F5
NEWCOL	97,98/$61,$62	758,759/$$2F6, $2F7
ROWINC	121/$79	760/$2F8
COLINC	122/$7A	761/$2F9
TEMP2	788/$314	787/$313

Reserved (spare) locations (400/800) now in use in XL/XE:
568 ($238), 569 ($239), 581 ($245), 654 ($28E), 713 - 735 ($2C9-$2DF), 745 ($2E9), 757 - 761 ($2F5-$2F9), 829 - 831 ($33D-$33F), 1000 - 1020 ($3E8-$3FC)

For detailed information about the changed uses, refer to ***Mapping the Atari*** (Revised Edition), by Ian Chadwick, Compute! Publications, Inc., 324 W. Wendover Avenue, Suite 200, Greensboro, NC 27408. (919) 275-9809. $16.95.

SCREEN DISPLAY

Lots of popular games make use of fine scrolling across large multi-screen maps, usually in conjunction with an altered character set. You can do this vertically in GRAPHICS 0 without having to write special display lists.

LOAD a BASIC program, POKE 622,255 ($26E) and then LIST. The program scrolls smoothly off the screen. Now, if you type DOS and list the disk directory, you'll see fine scrolling is still enabled. Cancel fine scrolling by POKE 622,0.

Fine scrolling works with the text screen editor (E:) but other graphics modes still require special display list techniques.

You can redirect the screen display to the printer by POKE 838,202 and POKE 839,254 ($346, $347). To send it back to the display again, use POKE 838,175 and POKE 839,242.

CHARACTER SETS

The XL/XE has another set of letters and numbers—the international, or European, character set. You can switch from your normal ATASCII display to this set by POKE 756,204 ($2F4) and return to the American set by POKE 756,224. If you change over, try typing several CONTROL-key combinations to see the other character set.

The international character set takes 1K of memory from 52224 to 53247 ($CC00-$CFFF). If you use a program to turn your OS ROM into OS RAM, you can use this space for your own routines or graphics.

THE KEYBOARD

You can control the delay rate for repeating keys and the speed of the repeat. Location 729 ($2D9) controls the delay between the time a key is pressed and the time it begins repeating, measured increments of 1/60th second each—one VBLANK interval. Initially it is set at 48—0.8 seconds before a key will repeat. A short delay can speed things up, try POKE 729,6. Increase the delay time by POKE 729,120. Any number between one and 255 will do, while zero means no repeat at all.

Location 730 ($2DA) controls the repeat rate—the number of times a key repeats in a second while you hold down the key. It is initially set at 6. Like 729, the rate is a measure of VBLANK intervals (60ths of a second), so this default value is 10 repeats per second. Therefore, 60 would be one a second, 1 would be 60 per second. Zero means no repeats at all.

To disable the keyboard completely, POKE 621,255 ($26D). You'll have to press [RESET] to regain control, or have your program POKE zero into this location (perhaps when a console key is pressed, since this doesn't lock out the console keys).

You can redefine the keyboard by rewriting the system keyboard definition table. The address is stored in 121 and 122 ($79, $7A; LSB/MSB) and normally points to 64337 ($FB51). This is a 192-byte table of keystrokes. The first 64 are lowercase, then key plus [SHIFT] and finally key plus [CONTROL] in the following order (reading left to right):

l	j	;	F1	F2	k	+	*
o	. . .	p	u	RETURN	i	—	=
v	. . .	c	F3	F4	b	x	z
4	. . .	3	6	ESC	5	2	1
,	SPACE	.	n	. . .	m	/	inverse
r	. . .	e	y	TAB	t	w	q
9	. . .	0	7	BACKS	8	<	>
f	h	d	. . .	CAPS	g	s	a

The F1-F4 keys are function keys for the 1200XL. They have their own definition table vector at 96, 97; $60, $61. The keys marked ". . ." are unused. Remember when writing a new table that shifted "w" is "W" but a shifted "5" is "%" and [CONTROL] with a key gives a graphic symbol or command, just like on your keys. Use the ATASCII values for your table, then POKE the address into these locations. One use would be to design a Dvorak keyboard or to mask out unwanted keys for input.

Many 400/800 programs made direct jumps to keyboard 'get' and 'put' routines rather than through the proper vectors, which makes them incompatible with XL/XE machines. The get routines in the XL/XE begin at 62026

continued on next page

($F24A). This was 63038 ($F63E) in the 800. The put routines begin at 62128 ($F2BO). or 63140 ($F6A4) in the 800. If you have a program which won't work on your XL/XE, try finding if it uses these locations and change them.

Other routines, like printer I/O have also moved. But if the program uses the vector address and doesn't jump to the routine directly, it should still work. Vector tables are located between 58368 and 58495 ($E400 to $E47F) and jump vectors between 58488 and 58508 ($E450 to $E48C).

KEYBOARD CLICK

The XE and XL computers produce a noisy chirp each time a key is pressed. You can turn it off by POKE 731,255 ($2DB) and back on with POKE 731,0. The difference betwen turning the volume on your TV down and POKEing 731 is that other sound prompts are still active—cassette or disk load sounds for example. Only the keyboard is silenced.

THE HELP KEY

Many programs use the [START], [SELECT] and [OPTION] keys, they register a key press at 53279. But few use the [HELP] key, because it uses a new location, 732 ($2DC). You can PEEK the status of the [HELP] key in your own programs. A 17 means HELP has been pressed, while 81 means it has been pressed with the [SHIFT] key and 145 means it has been pressed with [CONTROL]. That number remains in 732 until you POKE it with zero to clear it.

BASIC

Did you forget to hold down the [OPTION] key when you turned on the computer? Instead of rebooting the system, simply POKE 1016,255 ($3FB) with any non-zero number and press [RESET]. You'll jump to DOS immediately and the system won't see BASIC installed. Of course, if you want to go to BASIC later, you'll have to re-boot.

MEMORY MANAGEMENT

Location 54017 ($D301) was PORTB—the register for the third and fourth joystick or paddle ports on the 800. Now it's used for memory management:

Bit:	Use
0	0 disables ROM from 49152 to 53247 ($C000 - $CFFF) and 55296 to 65535 ($D800-$FFFF)
1	0 means BASIC is enabled, 1 = disabled
2	130XE memory management (see **Antic**, November 1985)
3	ditto (controls extra 64K bank access)
4	ditto (in 16K blocks addressed by ANTIC, the 6502)
5	ditto (or both)
6	reserved for future use (256K XE?)
7	0 means self-test ROM enabled, 1 means RAM enabled

The new use of PORTB was described in **Antic**, November 1985 in my article 130XE Memory Management. Bits 2 through 5 are used by the "Freddie" chip in the 130XE, the only difference between the XE and XL computers.

OTHER LOCATIONS

There isn't space here to cover the entire XL/XE memory map. You'll find a complete description in my revised edition of *Mapping the Atari.* But here are a few other locations unique to the XL/XE computers.

CMCMD (07, $07) is used as a flag for passing commands to the 835 and 1030 modems. When it's not zero, it passes a command.

PALNTS (98; $62) holds the version of the display handler. Zero for North America.

DSCTLN (725, 726; $2D5, $2D6) is the disk sector size. A default of 128 bytes, it can be as large as 65535 though most drives won't support a non-default size.

DMASAV (735; $2DD) was designed to restore the 1200XL display if disabled. If you POKE DMASAV with your DMA value from 559 ($22F)—34 for GR.0 screens—then you can disable the display with POKE 559,0. Any key press moves the value in DMASAV back to 559 and restores the screen!

PUPBT (829—831; $33D—$33F) are three registers used to test memory integrity on warmstart. If the values aren't 92, 147 and 37 ($5C, $93, $25) respectively, the system does a coldstart when you press [RESET].

GINTLK (1018, $3FA) reads one when an external cartridge is installed, zero if not (or if ROM BASIC is in use).

The self-test code is actually in the OS ROM, hidden below the GTIA, ANTIC and POKEY chip area ($D000 to $D7FF). When called, it is moved down to the area between 20480 and 22527 ($5000—$57FF) and run from there. If you can burn your own OS EPROM, you could replace this code with something far more useful, like a monitor.

What was once an empty 4K block in the 800 is now used for interrupt handlers and for the international character set— 49152 to 53247 ($C000—$CFFF). Some older 800 programs test this area for certain allowed values before they will run. This is to discover if you have something "unofficial" like Omnimon in that space. You may need the FIX XLtranslator disk in such a case.

There is also a fair amount of code used for the parallel device handler, including considerable RAM space reserved for device variables. Since manufacturers have not taken advantage of this rather powerful feature, the code doesn't do anything and the numerous RAM locations can be used for your own storage. For example, addresses 713 to724($2C9—$2D4). Rumors abound about a revised, enhanced OS due soon— one which corrects various faults like the printer timeout. If and when such an OS is released, I'll report the changes here for **Antic** readers.

Ian Chadwick is the author of the standard reference book for serious Atari programmers, ***Mapping the Atari.*** *We are also proud to announce that he has now joined* ***Antic*** *Magazine as a Contributing Editor.*

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Dandy Dissolver

Spirals & horizontal sweep effects

by FRED PINHO

Get ready to rival George Lucas—or at least your local TV station—with these fancy video effects. Dandy Dissolver is a BASIC program for 8-bit Atari computers with 48K memory and a disk drive.

The Atari is well known for its graphics capabilities. One commonly used feature is page flipping, the ability to rapidly switch from one pre-drawn screen to another simply by altering several bytes in the display list.

While impressive, the technique lacks elegance. Moviemakers often use "dissolves" and "fades" to change from one scene to the next. With its close control of the video screen, your Atari can create a variety of screen dissolves. This article describes two—a spiral dissolve and a horizontal sweep dissolve.

These routines are written in machine language and can be customized to run at any speed in any graphics mode (0-15). You can control and use these routines from your BASIC program with the USR function. Listing 1 demonstrates these dissolves in Graphics 1, a mode frequently used for game screens. Use Listing 2 to create these BASIC subroutines for use in your own programs.

GETTING STARTED

Type in Listing 1, DISOLV1.BAS, checking it with TYPO II, and SAVE a copy before you RUN it.

Listing 1 draws two hidden Graphics 1 screens and a title screen. Next, the program demonstrates two examples of spiral and sweep dissolves. Press the [OPTION] key to step from one dissolve pattern to the next. Finally,

the program demonstrates both dissolve routines at various delay rates.

Listing 2 creates the dissolve routines which you can later include in your own BASIC programs. The dissolve routines are LISTed to a disk file which can later be ENTERed into your BASIC program. These dissolve routines use a delay subroutine which is stored in the lower half of the cassette buffer (locations 1021-1064, $03FD-$028). This means your program cannot access the cassette.

Type in Listing 2, DISOLV2.BAS, checking it with TYPO II, and SAVE a copy before you RUN the program.

Listing 2 can create three different types of BASIC dissolve routines—one "sweep" routine, and two types of "spiral" dissolve routines. You can use any or all of them in your BASIC program. The sweep dissolve works in all graphics modes, and occupies line numbers 32060-32200. Listing 2 will LIST this routine to a disk file called SWEEPDIS.LST.

Due to the wide variety of screen dimensions, two spiral dissolve routines are needed, one for bit-mapped modes (Graphics Modes 3-11, 14 and 15) and one for character modes (Graphics Modes 0-2, 12 and 13).

Note that your spiral patterns will vary with the graphics mode chosen. Spiral dissolves using Graphics Modes 8 and 15 present particularly unusual patterns.

The bit-mapped spiral dissolve routine created by Listing 2 uses line numbers 32000-32200. Listing 2 LISTs this routine to a disk file called SPRBITDS.LST. The character mode spiral dissolve uses line numbers 32030-32200 and is LISTed to disk as SPRCHRDS.LST.

USING WITH BASIC

Any of these routines can easily be merged with your BASIC program. Just LOAD your program, then ENTER the subroutines you need. Make sure your program does not use line numbers above 31999.

As each routine uses exclusive line numbers, you can use all three routines in your program.

After properly setting up your main and hidden screens, begin the dissolve with the appropriate USR call, as shown below.

Use this USR call for sweep dissolves:

```
Z=USR(ADR(SWPDIS$),STDDS,STDDH,DLY,C0,C1,C2,C3,C4)
```

Use this USR call for spiral dissolves in bit-mapped modes:

```
Z=USR(ADR(SPBTDIS$),MDLSCR,MDLHDN,DLY,STDDS,EDDS,STDDH,EDDH,C0,C1,C2,C3,C4)
```

Use this USR call for spiral dissolves in character modes:

```
Z=USR(ADR(SPCHDIS$),MDLSCR,MDLHDN,DLY,STDDS,EDDS,C0,C1,C2,C3,C4)
```

HOW IT WORKS

Z is a dummy variable required by the syntax of a USR call.

ADR($) is the address of the string which holds the dissolve subroutine.

MDLSCR is the address of the middle coordinate of the visible screen. This is the point at which the spiral dissolve begins. To find this address, determine the starting address of screen memory. Add this value to the appropriate value given in *Figure 1*.

The starting address of visible screen memory (STDSS) is given by **PEEK(560)+PEEK(561)*256**. Remember to execute a graphics call before using this formula.

MDLHDN is the address of the middle coordinate of the hidden screen. Find this value the same way you found the value of MDLSCR.

DLY is the delay value. This number can range from one to 65535. Higher values create slower dissolves. You'll have to experiment with your graphics mode to find the best delay value. Generally, the best effects result from delay values between 2000 and 8000.

STDSS is the starting address of visible screen memory.

EDDS is the address of the ending coordinate of visible screen memory. Add STDDS to the value given in *Figure 1* to find EDDS.

STDDH is the starting address of the hidden screen.

EDDH is the address of the ending coordinate of the hidden screen. Add STDDH to the value given in *Figure 1* to find EDDH.

Figure 1

Graphics Mode	Middle Coordinate Factor	End Coordinate Factor
0	459	959
1	189	399
2	89	199
3	94	199
4	194	799
5	389	1599
6	789	3199
7	1579	6399
8	3179	7679
9	3819	7679
11	3819	7679
12	379	799
13	179	399
14	1589	3199
15	3179	6399

C0,C1,C2,C3,C4 are the values of the playfield and background color registers (locations 708-712) for the new screen. Although most graphics modes do not use all five color registers, you must specify all five values in the USR call. Otherwise, your computer will lock up.

Listing 1 gives a good example of how to set up and manipulate hidden screens. Remember, each USR call must be typed in *exactly* as shown, or you'll get unusual effects and possibly a locked-up computer.

Fred Pinho's Atari Time Machine appeared in the September, 1985 ***Antic****. He's a biochemical research engineer from Valley Cottage, New York.*

Listing on page 88

Digitize your self



Digitize your picture with the perfect hardware/software combination: COMPUTER EYES and MAGNIPRINT II+

COMPUTER EYES, capture software and MAGNIPRINT II+ Only $114.95

COMPUTER EYES/MAGNIPRINT Camera System
A complete ready to run system for those without access to video equipment. This system includes Computer Eyes, Magniprint II+, a high quality B/W video camera, and a 10 ft coaxial cable with appropriate connectors. Only **$299.95**

COMPUTER EYES alone (with capture and display software only) **$99.95**

Computer Eyes lets you take any form of video input and save it as a high-resolution graphics screen. You can use a video camera, VCR, TV output, video disk, other computers, etc. Now you can capture your picture, your friends or any video image and show it on an Atari computer. Computer Eyes is an innovative slow scan device that connects between any standard video source and your Atari computer (see the review in A.N.A.L.O.G. magazine).

- Do a complete Hi-Res scan in under 6 seconds
- Unique multi-scan mode provides realistic grey scale images in 24 seconds, and up for more detail scans.
- Full one-year warranty on parts and labor
- Plugs into your Atari joystick ports and uses a standard video phono plug

Now anyone can create the kind of graphics seen in this ad. When Computer Eyes is combined with Magniprint II+, you get unique capabilities that no other system can offer.

- Print your pictures in up to 19 different sizes, including poster sizes several feet across
- Print pictures with full shading for a level of realism even better than your TV screen
- Take your Computer Eyes images and modify them with your Koala Pad, Atari Touch Tablet, Micro Illustrator program, or Magniprint's special touch-up feature
- Works with Epson, Gemini, Panasonic, NEC, Citoh, and other compatible dot-matrix printers (850 interface or equivalent required)
- Supports all Magniprint II+ features

PARROT — Digitize your voice with Parrot.

All new sound digitalizer and synthes... r your Atari. Tired of low-quality mechanical sounding voice output? Now you can make any Atari speak in your own voice. Tired of four tone sound? Now any Atari can play a whole orchestra complete with a singing choir. "The Parrot" digital sound synthesizer system lets you do all this and much more.

How it works — "The Parrot" system plugs into your joystick port and lets you record pure digital sound from your stereo, TV, microphone, or any other sound source. The special Parrot software lets you play back this high quality sound on any Atari system with no special hardware needed. It even lets you put this unbelievable sound right into your own programs, that will run on anyone's Atari. It also includes digital sequencer software that lets you turn your Atari into a synthesizer comparable to those costing thousands of dollars. Turn any natural sound into a musical instrument, or design your own custom sounds. Imagine playing a song with the sounds of a dog's bark, a chinese gong, a car's honk, your own voice, or anything your imagination can come up with. It turns your keyboard into an organ and lets you instantly switch between up to nine different digital sounds, each with three full octaves of notes. Recording time varies depending on available memory and quality level desired. You've got to hear it to believe it!!!!

THE PARROT digital input hardware and playback/synthesizer software with sample sounds and demos

All For Only **$39.95**



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"Magniprint II is a versatile and powerful program which will meet most, if not all your print out needs." — ANALOG MAGAZINE

The plus is in the shading — now Magniprint lets you print the highest quality reproductions of your screens available anywhere. It lets you choose the shading you want for the different colors and shades on the screen. It allows you to adjust the shades while your picture is displayed on the screen, so what you see is what you get. Magniprint prints the shades on your standard printer and paper by using specially designed dot patterns, yielding better looking output than you get on your screen.

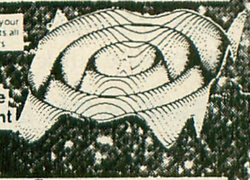
This new feature is perfect for printing pictures from Koala Pad, Touch Tablet, Micro Illustrator, and others. It will amaze you when you print pictures from Computer Eyes or Strip Poker.



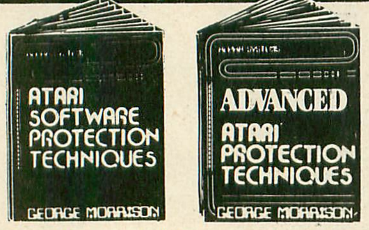
Print your Atari® graphics like you've never seen before! Magniprint II is the most powerful print utility available for your computer! It is the only software that can accurately print GTIA modes with 16 shades. Now accepts pictures from PRINTSHOP*. Prints 19 different sizes from ¼ page to giant wall sized posters. Prints across or down the page, regular or inverse, with a centering option. Works with printers compatible with NEC, CITOH, EPSON, & Gemini (850 interface or equivalent required). Accepts your own graphics creations or those created with Graphics Master*, Micropainter*, Fun With Art*, SYN-Graph*, Atari Graphics Light Pen*, B/Graph*, Koala Pad*, Atari Touch Tablet*, Paint*, Strip Poker*, Graphics Magician*, and others • Includes many beautiful sample pictures • Does amazing graphics with your standard printer and paper • Special feature lets you modify pictures with your joystick • Add text to your pictures • Can convert a graphics mode 9 picture to a graphics mode 8 one (and vice versa) • Allows you to print the whole screen or any selected portion of the screen in multiple sizes • Includes HELP screen for easy use • Prints GTIA modes 9, 10, and 11 with 16 different shades. Posters print along continuous sheets of paper which are attached together when done.

40% Faster — ONLY **$24.95**

FREE With Magniprint II-PRINTALL. Allows you to print your programs or files just as they appear on the screen. Prints all graphics symbols, even [illegible] and control characters.



Actually done with Magniprint



BOOK I + DISK: (The Original) Thoroughly explains the techniques used by advanced software pirates, and the copy protection methods used to stop them. It offers clear and understandable explanations sophisticated enough for software writers of any scale yet easy enough for a beginner just wanting to learn more about Atari® computers. A MUST READ FOR ALL ATARI® OWNERS.

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Dungeon Master's Apprentice

A Dungeons and Dragons scorekeeper . . .and more

by ERNIE NEGUS

Our mail shows that quite a few Antic readers are fans of the classic fantasy game Dungeons and Dragons. This program saves your Dungeon Master a lot of drudgery and keeps the game moving a lot faster. Dungeon Master's Apprentice stores all your characters and their abilities on disk, rolls multi-sided dice, and calculates confrontation damages. This BASIC program works on all Atari computers of any memory size, with disk or cassette.

Frumgar the Barbarian was sitting on a log and eating freshly cooked pheasant, when suddenly Morgoth, the Mystic Guardian of the Forest, sprang from within the gnarled, tangled roots of a curiously repulsive tree and attacked from behind!

Frumgar scrambled for his tarnished brass scimitar while avoiding the devastating sweep of Morgoth's iron hammer. His mind whirled frantically. Let's see, he thought, I'm a barbarian with a Druid Level of 5 and my Armour Class is 6—at least it was until last night's downpour.

Morgoth's eyes began to sparkle and the fingernails of his upraised left hand glowed a sickly green.

Oh no!, thought Frumgar, an Illusionist on top of it all. I wonder what his Damage Adjust might be? Of course, his Character Class may be low to begin with . . .

Who will survive? Everything stops while the Dungeon Master licks the tip of a stubby pencil and figures the odds.

ENTER THE APPRENTICE

But why should the Dungeon Master waste time and paper while his loyal apprentice, Atari (Cleric, level 64+) can do all the work?

Cleric Atari is fast, accurate, and keeps excellent ledgers of all characters who pass its way. Its memory is unsurpassed. And it'll even roll the dice for you!

THE PROGRAM

Type in Listing 1, DUNGEONS.BAS, check it with TYPO II, and SAVE a copy before you RUN it. Dungeon Master's Apprentice is a tool. It won't play the game for you, but it will take care of a lot of the tedious calculations. It's been tested under fire by hardcore Dungeons and Dragons players, and modified to meet their standards.

The program, when RUN, offers a series of menus which are controlled by joystick. The first menu tells what your apprentice has been trained to do.

You may let the apprentice roll your dice for you, with any number of sides—up to 100.

continued on next page

If you create a character, the apprentice will lead you through a series of questions such as Character Name, Class, Type, etc.

At any time, the apprentice will display all the attributes of any character you have previously created.

The apprentice will keep track of all the characters you have created by dynamically adding DATA statements to its ledgers. Whenever you wish, you may save your collection of characters to a disk file. Any number of files may contain up to 40 characters under various filenames. (Cassette owners should enter C: as a filename, and may have to press [RETURN] during the save to ensure that the computer returns to the program after the save.)

Similarly, the apprentice will call up any collection of characters you have previously filed.

AUTO-COMBAT

One of the best things about the apprentice is its rapid ability to calculate a fight. Choose Auto-Combat from the main menu, enter the names of your opposing characters (they must already be on a file that has been loaded) and the apprentice will display something very much like this:

FRUMGAR/SCIMITAR Swings at MORGOTH/SPELL

Attacker is a level 5 Druid
Defender has a 10 Armor class

Attacker must roll a basic 8 to hit
Which is modified to a 12 by
the Defender adjust of 4
The Attackers bonus to hit of 7
further modifies this to a 5

The Attackers Damage Adjust is 13

The roll is 5 and is a hit

CHANGING THE PROGRAM

The program uses data entered to figure out who is to survive. Lines 2070 to 3160 are D&D tables for the five major classes. The DATA statements on lines 220 and 230 contain information on subclasses of characters. You can change these subclasses if you wish. Just remember to use a capital Q as the last element. You must also change lines 700 to 730 to reflect the new range of classes.

When creating characters, the program actually adds lines to itself (specifically lines 0 to 42.) Saving characters simply LISTs these lines to disk or cassette, and loading characters ENTERs these lines. Caution should be taken when SAVEing the apprentice program. If you save lines 0 to 40, the characters will be saved along with the program.

*Ernie Negus is the author of the first published program for the 130XE, the One-Pass 130XE Disk Copier (**Antic**, September 1985). He runs a BBS in Portland, Oregon. Just dial (503) BEE-CATS.*

Listing on page 92

Appointment Calendar

Organize your personal schedule

by ALFRED FILSKOV, III

A cleanly programmed, useful personal appointment calendar. No more frantically trying to keep track of your schedule on scraps of paper, when your Atari takes over as social secretary. This BASIC program works on all 8-bit Atari computers with 32K memory, disk only.

Keeping track of appointments is not a new job for computers. But I've seen other calendar-type programs that weren't as practical as this one. For instance, they wouldn't let you write in the appointments and view the calendar on the screen at the same time. Appointment Calendar also lets you print the entire month, or only individual appointments, on any Epson, Gemini, or compatible printer.

If you've ever tried to use a typewriter to squeeze event listings on a calendar, you'll appreciate how much neater and easier this program is. Soon you'll be cranking out well-organized calendars—great for offices or clubs to use in newsletters or flyers to announce upcoming events.

To put this program to serious use, you might want to keep a separate disk solely for appointments. A disk with DOS and the Appointment Calendar program on it still has enough room left for 17 months.

My Appointment Calendar begins every week on Monday, the way most commercial appointment diaries do.

MAKING A DATE

Type in Listing 1, CALENDAR.BAS, check it with TYPO II and SAVE a copy before you RUN it. Appointment Calendar is simple to use. When you RUN the program you'll find the Main Menu on a red screen. Press the [1] on your keyboard to create a month. Then type in the number of the month (April is 4, etc.) and press [RETURN]. Now type in the last two digits of the year (86 for 1986, etc.) and press [RETURN].

A calendar for that month, and four windows, will pop up on a green screen. To write an appointment on the calendar, choose option 2, Edit Date, in the menu at the upper right corner of the screen. Now follow the instructions that will appear in the MESSAGE window at the lower right corner.

Type in the day and press [RETURN]. The cursor will move down to the appointment window. Write your appointment message here, using a [RETURN] at the end of each line. Backspace to [DELETE] any mistakes. The cursor works in this window, but it's very slow. Press [ESC] to load your message in the calendar, where it will be indicated onscreen by a display of the date in inverse type.

To print that day's appointments only, press [3]. This will work with any printer. To print the calendar for the whole month, just press [4]. Unfortunately, only condensed print will fit in the calendar spaces, so this option will only work on printers with Epson, Gemini, or compatible print modes. You will be given the option of saving the calendar to disk before you can type [5] to return to the Main Menu.

Once you're back to the main menu, type [3] to see your calendars listed in the disk directory, or [2] to delete any month you no longer need. When you're done, just press [4] to end the program.

Alfred Filskov, III is an Industrial Engineering major at North Carolina State University.

Listing on page 86

Atari Bingo Caller

Random number generator at work

by JAMES PERONE

Bring your bingo games into the computer age with Computer Bingo Caller. This simple BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette. You will, however, need your own bingo cards and markers in order to play.

Next time you play bingo, let your Atari do the calling. No more old-fashioned messy scraps of paper in tumblers. Faster, too. More than a fun addition to the good old game of bingo, Computer Bingo Caller is also a demonstration of how to program random number generation. After all, picking a random number and comparing it against previously chosen numbers is one of the things a computer can do faster than the human brain.

First, type in Listing 1, BINGO.BAS, check it with TYPO II and SAVE a copy before you RUN it.

After the red and blue title screen appears, the bingo caller will display a number and ask you if you want a new one. Type YES and press [RETURN] for a new number to pop up. After that, YES will automatically appear each time you press [RETURN]. Since you presumably already know how to play bingo, you can take it from here. Just keep choosing numbers until "BINGO, there's a winner!" Then type NO to start a new game.

James Perone is working towards a PhD in Music Theory at State University of New York, Buffalo. He is active as a composer of computer music in Fortran and as a freelance musician.

Listing on page 94

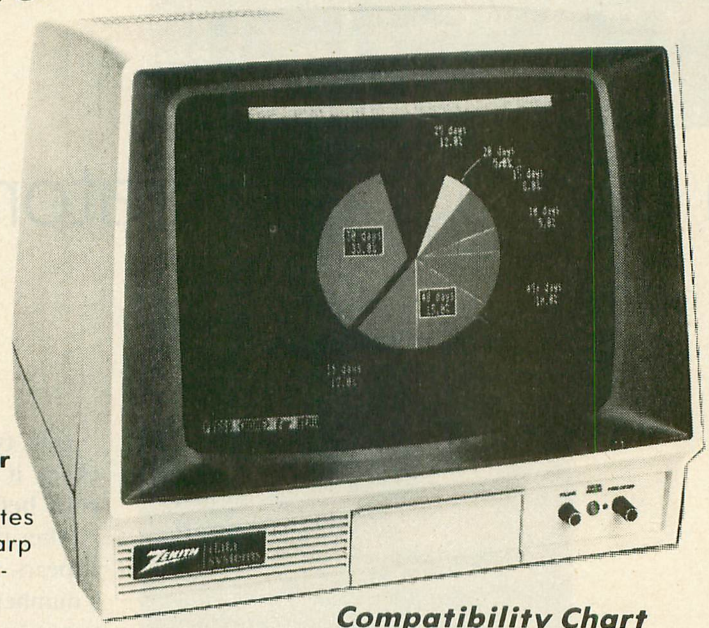
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The ZVM 131 is designed to interface with most personal computers, VCRs, video discs, video games and modular TV tuners that have either composite video or RGB direct drive outputs.

Compatibility Chart

Computer	Interfaces Via
Apple II	Composite
Aplus 3000	RGB
Apple III	RGB
IBM PC	RGB
Commodore 128	RGB/Composite
Commodore 64	Composite
Commodore Vic-20	Composite
TI 99/4	Composite
Atari 800	Composite
Atari 1200	Composite
Atari 1400	Composite

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The output sound level is externally regulated by a user-adjustment volume control. Use the Zenith quality sound system to monitor the modern audio capabilities of the computer generation.

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ZVM 131's 13" diagonal display screen can exhibit impressive graphics and intensely clear copy. Easy-to-reach front access user controls (picture, black level, color level, tint, sharpness, audio volume, background noise control) make display adjustment simple and fast. An LED power on indicator notifies the user when the monitor is operable.

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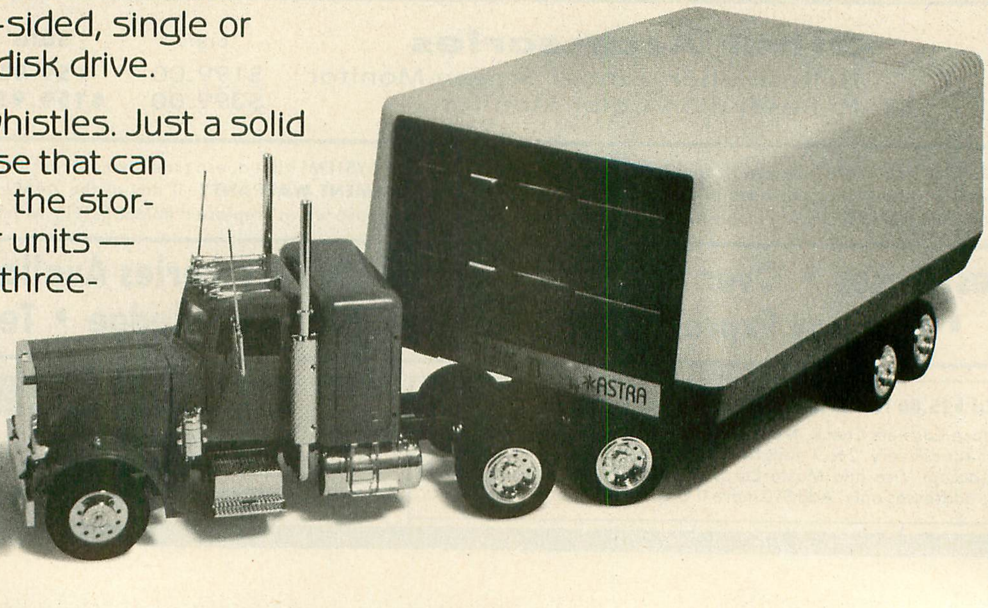
Software programs such as word processing, data base management, spread sheet analysis and mailing lists are made more powerful, and, at the same time, easier to use if you have two disk drives.

And it's compatible with Atari's new XE Series as well as the original and intermediate computers, 400, 800, 600XL, 800XL and 1200XL.

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TWO HOT NEW MODEMS

Tel-A-Modem and MultiModem

by BRAD KERSHAW, **Antic** Products Specialist

Antic recently checked out two new modems that offer impressive features at a wide range of prices. Here's what we found. . .

TEL-A-MODEM

'Smart'' modems have built-in microprocessor chips and can carry out a series of complex commands with a minimum of instructions from your computer. However, the **Code-A-Phone Tel-A-Modem** ($599) is not just a smart modem—it's a smart telephone too.

If you have two phone lines, you can simultaneously use your computer for telecommunications while you're making voice calls on the Tel-A-Modem's built-in phone.

This phone has its own nine-number auto dial memory with battery backup. There's also a hold button, plus auto redial of the last number you called.

The 300/1200 baud modem itself has the most familiar features of the widely used Hayes SmartModem, right down to the dip switch settings. You get automatic or manual answering, auto send and auto receive—all in either pulse dial or tone dial.

Code-A-Phone Corp.
16261 S.E. 130th Avenue
Clackamas, OR 97015
(503) 655-8940

MULTI MODEM

The **MultiTech MultiModem** ($499) also has all the key features of the Hayes SmartModem. The biggest difference seems to be that the Multi is in a white plastic case while the Hayes has a more compact brushed metal casing.

The front of the MultiModem has light emitting diodes (LEDs) indicating modem status such as sending or receiving data, carrier detect, 300 or 1200 baud, busy signal and transmission. Most operations can be automated.

The new MultiModem 224 model ($795) adds a lightning-fast 2400 baud to 300/1200 baud operations. Otherwise it's the same as the 300/1200 except for two additional switches on the front.

Both of the MultiModems have a built-in speaker for monitoring your call. The speaker automatically shuts off after connection is made.

MultiTech Systems
82 Second Avenue S.E.
New Brighton, MN 55112
(612) 631-3550

WHICH MODEM?

If you are planning to buy a modem, one major consideration is that a smart 300/1200 baud modem will communicate with just about any computer. With only 300 baud you are limited to communicating with computers running at the slower speed.

Everybody may well be telecommunicating at the 2400 baud standard in a couple of years. But meanwhile that speed won't do you any good unless there's another 2400 baud system at the other end. Ma Bell also says you should have a dedicated line for 2400 baud operation because of the carrier noises generated at this high speed.

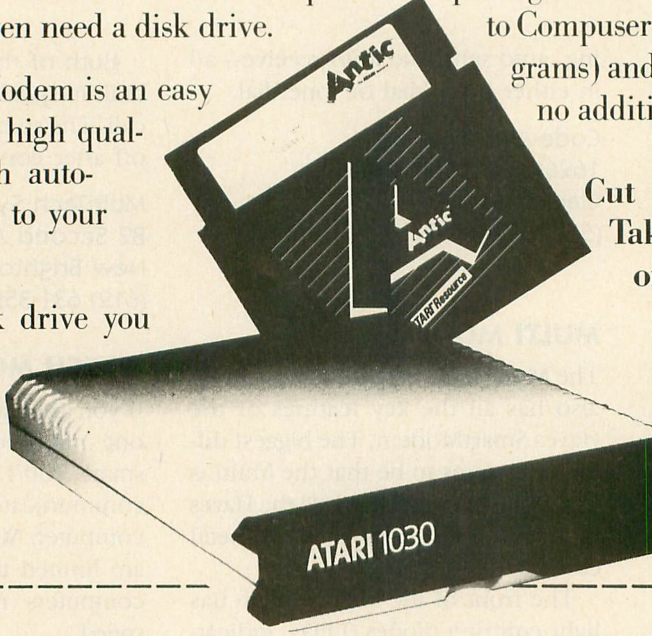
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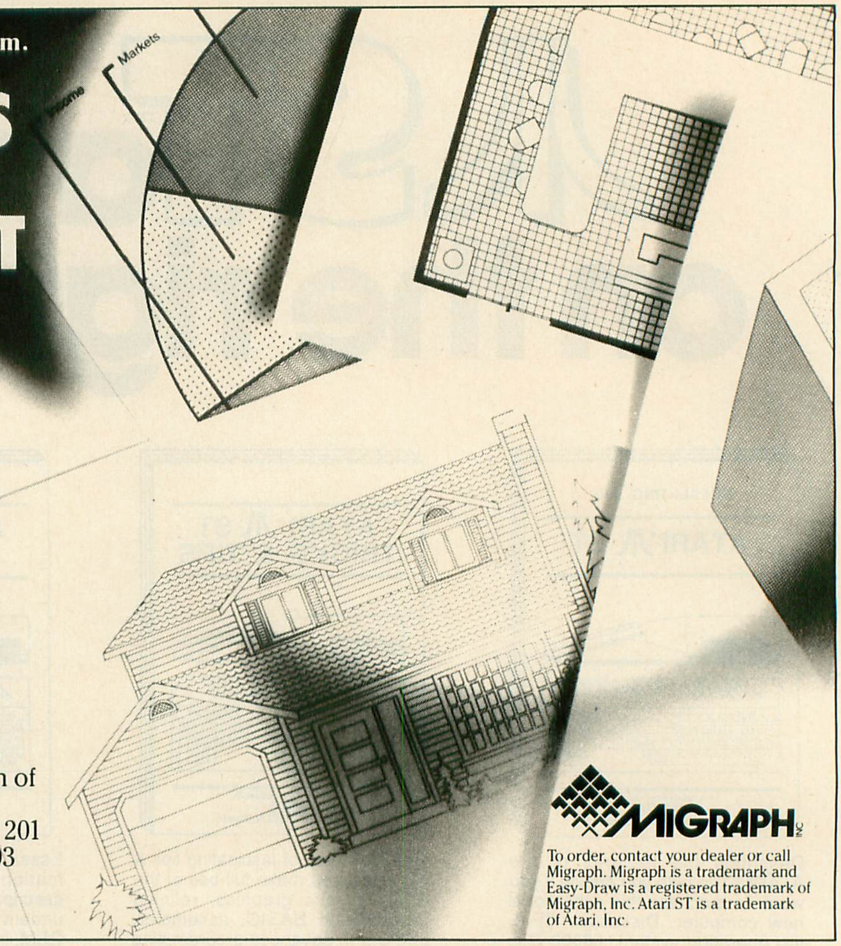
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BASIC XE FROM O.S.S.

Ultimate BASIC for 8-bit Atari

by CHRISTOPHER CHABRIS

When Atari shipped the 130XE computer in April 1985, Optimized Systems Software (OSS) seized the opportunity to create the first programming language designed for the expanded 128K memory of the XE. The result is cartridge/disk **BASIC XE**, the fastest and most powerful BASIC available for 8-bit Atari XL and XE computers. NOTE: BASIC XE will *not* run on Atari 400 or 800 models. Users of these earlier computers still have BASIC XL available from OSS.

Optimized Systems Software was the first independent company to write software for Atari personal computers. Bill Wilkinson and his programmers created the disk file management system of DOS 1.0, 2.0 and 2.5, as well as Atari BASIC and the Atari Assembler Editor cartridge. But they didn't stop with software just for Atari to bundle with its computers. OSS went on to publish the best line of Atari programming languages and tools including MAC/65, ACTION! and BASIC XL.

BASIC A+ was the first OSS enhanced version of Atari BASIC. Unlike the Microsoft BASIC released by Atari, BASIC A+ was compatible with source code that ran under Atari BASIC, except for a few minor exceptions. BASIC A+ was available only on disk, but the subsequent, improved BASIC XL came in super-cartridge form, using the technique of bank selection to cram 16K of ROM code into 8K of address space and save 8K for programs.

Now comes BASIC XE, one of the largest programming languages for the 8-bit Atari computers. Its 27K of code is divided between a 16K super-cartridge and 11K of extensions that can be loaded from disk when the cartridge is booted. If these optional extensions are not present on the boot disk, BASIC XE still functions—but without some of its extra features. With or without the extensions, the language occupies 8K of address space.

CUSTOMIZED STATEMENTS

BASIC XE is rich in commands and functions, with 140 built-in keywords. I say "built-in" because the language makes it possible for programmers to create named procedures that accept parameters—in effect, adding statements to the language. This enhancement completes the evolution of Atari BASIC into a tool for modern programming. The IF:ELSE:ENDIF and WHILE:ENDWHILE constructs (introduced in BASIC A+) allow for Pascal-like structured programming style, and the new PROCEDURE:LOCAL:EXIT trio coupled with CALL give the programmer modular design and recursion capabilities in an interpreted language.

It is now possible to create libraries of often used PROCEDUREs quite simply. Before BASIC XE, the programmer had to precisely define which variables contained values to be passed to a subroutine, which variables would change during its execution, and which variables would contain values returned from the subroutine. A chore, and difficult to debug! Here's a sample PROCEDURE definition and execution in BASIC XE:

```
30000 Rem CALCULATE F(X) WHERE F IS A
POLYNOMIAL WITH COEFFICIENTS IN P()
30010 Procedure "EVALPOLY" Using Degre
e,!P(),X:Local E,V
30020    For E=Degree To 0 Step -1
30030       V=V+(X^E)*P(E)
30040    Next E
30050 Exit V
```

These lines would fall near the end of the program, usually beyond the END statement. They define a new procedure named EvalPoly (Evaluate Polynomial) which receives three arguments: Degree, the degree of the function; P( ), an array containing the coefficients in ascending order; and X, the value at which to evaluate P. Note

continued on next page

that non-scalar parameters are preceded by an exclamation point.

LOCAL creates the following variables as temporary scalars. Other variables with the same names are not affected, and the local variables disappear when an EXIT is encountered. The EXIT statement causes the procedure to return V (making the procedure really a function!). EvalPoly could be called as follows:

```
CALL "EvalPoly" USING 4,IF( ),2.5 TO Y
```

This statement would evaluate the fourth degree polynomial represented in array F at the value 2.5 and store the result in variable Y. The beauty of this parameter passing and returning scheme is that it is totally independent of line numbers and variable names. It is portable like Pascal procedures or C functions.

I forsee the availability of specialized libraries to add capabilities to BASIC XE. For example, you could collect procedures to do matrix algebra or create various graphics objects. Since LOCAL can only create scalar floating point variables, BASIC XE is particularly suited to mathematical applications.

SPEED TO SPARE

This brings us to another new feature of BASIC XE—its fast mathematics routines which replace those built into the XL/XE Operating System, when the extensions are loaded. According to OSS, these routines are more accurate and twice as fast as those in the FastChip from Newell Industries, which are supposed to be 30% faster than Atari's built-in routines.

BASIC XE also features the semi-compiled mode of operation introduced in BASIC XL. When the FAST command is encountered at the beginning of a RUNning program, all line number references are converted into absolute addresses, eliminating many time-consuming searches through the program. OSS claims that these two enhancements make BASIC XE run two to six times faster than Atari BASIC.

To test BASIC XE's speed, I used the off-the-shelf Atari BASIC software B/Graph, from Batteries Included. Among B/Graph's statistical capabilities is a program to do regression analyses. I felt this to be a good test because it uses extensive iterations and floating point calculations—BASIC XE's strengths. Using the sample datafile PLANET, I followed the instructions on pages 113—114 of the B/Graph Manual and obtained the following completion times for different versions of BASIC:

Atari BASIC, rev. C	30 seconds
BASIC XL, v1.03	12 seconds
BASIC XE, v4.10	7 seconds

The first was tested under Atari DOS 2.05, the others under OSS DOS XL 2.30p. BASIC XE without the extensions loaded performed similarly to BASIC XL, and using EXTENDed mode made no difference in any case.

So BASIC XE does offer significant improvements in speed when running Atari BASIC programs. Exercising its features from start to finish in the program development process should yield shorter, more elegant and readable, and still faster code than possible with any other BASIC for the Atari. And it will take less time to write the program because BASIC XE's powerful commands take the place of many machine-language subroutines. All this is possible on either the 1200XL, 600XL with 64K, or 800XL computers. But with the 130XE, you can do even more.

130XE SPECIALS

The new EXTEND command instructs BASIC XE to utilize the extra 64K memory available in the 130XE's secondary bank. Your program itself is relocated into this space. Main memory is reserved for variables, the stack, and other related items. (Page Six is always available for user purposes.) In EXTENDED mode, depending on your Disk Operating System, there will be approximately 63K available for program and 32K available for data.

In this way, BASIC XE lets you take full advantage of your 130XE's memory without worrying about the nity-gritty details of memory management. However, if you want to use your extra 64K in another way besides a RAM-disk, BASIC XE allows you to specify an optional bank number in the POKE, DPOKE, PEEK, DPEEK, MOVE, BGET and BPUT commands. When referring to an address in the range $4000-$7FFF, the secondary bank's "access window", banks 0-3 are within that bank and the default bank 4 indicates main memory. This makes memory management convenient compared to twiddling the PIA PortB bits.

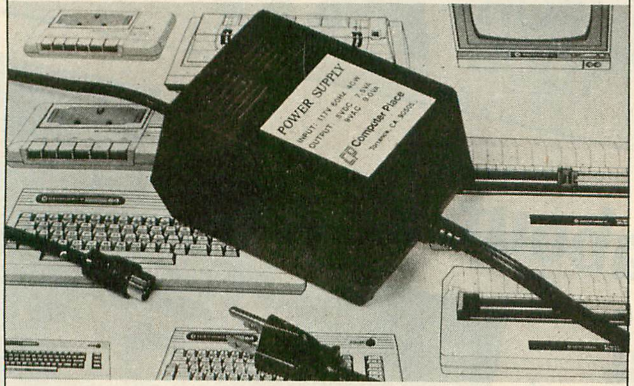
BASIC XE's other advanced features are, as they say, too numerous to even list here completely. They include, among others, commands to sort arrays into ascending or descending order, Microsoft BASIC string handling, OSS's classic file manipulation and Player/Missile graphics commands, bit-manipulation operators, hexadecimal numeric support, and program development aids like disk directory, renumbering, and cross-referencing.

What should be added to BASIC XE? Well, using the 5K remaining in my wished-for 32K cartridge, OSS could add the REPEAT:UNTIL construct, integer variables, dynamic memory allocation, and advanced sound control—to name just a few possibilities. And of course, some sort of run-time library or compiler would be nice.

BASIC XE is an excellent product. It's the language that should have been built into the 130XE. OSS is a company that has always supplied the highest quality systems software for all Atari computers, but they have outdone themselves with this one. One can only wonder how they will top BASIC XE. I hear they are developing for the ST machines.

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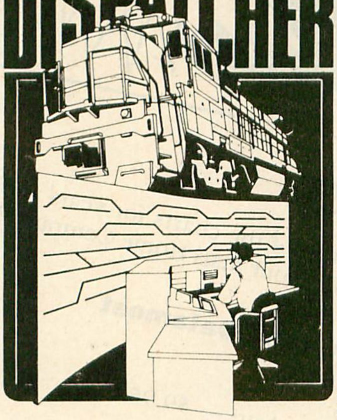


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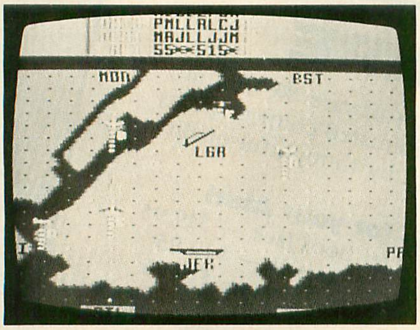
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Reviewed by Charles Jackson

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MicroProse hired several Air Traffic Controllers from New York and Baltimore to ensure that Kennedy Approach would be as realistic as possible. For example, the screen duplicates state-of-the-art radar displays used in modern air traffic control centers, and the rules of play closely parallel the Federal Air Regulations observed by real air traffic controllers.

Kennedy Approach even *sounds* realistic. Each time you communicate with a pilot, both sides of the conversation are "broadcast" through your monitor's speaker. The simulation uses a software voice synthesizer to achieve this very realistic effect.

HALLEY PROJECT

Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
$44.95, 48K disk

Review by David Plotkin

As a long-time astronomy buff, I was eagerly looking forward to Mindscape's **Halley Project**, a game that simulates flight through our solar system. I found Halley Project to be a complex and interesting program, although I suspect it may be too difficult and time-consuming for many users.

Each mission in Halley Project starts and finishes at a secret base on Halley's comet. Therefore, the comet is really fairly incidental to the program, since the base could have been located anywhere in space. The objective of a mission is fairly straightforward—travel from Halley's Comet to a series of destinations, then return to the comet. Each successful return to the comet increases your rank. When you achieve the rank of Starbird, you are rewarded with a secret code number which can be mailed to Mindscape for details on some spectacular final mission.

Succeeding at a mission is quite complicated. The first order of business is to figure out what your destination is. This can be as simple as "Go to Earth" or as obscure as a series of hints such as "Go to a moon with an atmosphere." Often the hints can apply to more than one destination. It is then up to you to choose the one that would get you the highest score (it's closest to your present position).

Once you have decided on a destination, you have to find it. Navigating the heavens is no piece of cake in Halley Project! A "radar" screen shows the sun and planets. It is up to you to decide which of the points on the radar map is the planet you want to go to. For example, if you want to go to Earth, you must count to the third point from the sun. Of course, this assumes you know what order the planets are in!



Moons do not show on the radar map. You must go to the planet that the moon circles. Having selected your destination on the map, you now need to find its distance from your present position and choose the correct direction. Distance is easier than direction. Around the edge of the radar map are the names of the twelve constellations (Gemini, Taurus, etc.). The destination planet is in the direction of a particular constellation.

You must return to the main screen and turn your ship with the joystick while watching the scrolling stars until you recognize the right constellation. Then you accelerate in that direction, jumping into "hyperspace" if the distance to be traveled is great.

When you jump out of hyperspace, you may well have to go through this whole procedure again. But you should be able to find your target and move to within 100,000 kilometers of the planet or the appropriate moon. A "planet finder" window on your main screen will identify the targets as they get close.

The toughest part of the whole simulation is locating a landing site. The documentation simply tells you to orbit the planet and wait for the planet finder to indicate that a landing site is available. But orbiting is not

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explained, and I was finally forced to call Mindscape to find out how to orbit the planet.

You must tap your joystick foward and then right or left, to establish an orbit velocity around the planet. The planet will move out of your finder, so you must keep it in the finder by moving your joystick with the button pressed. This adjusts your viewing angle, and does not change your speed or direction. If you think it is confusing to be looking in a different direction from where you are going, you are right.

You must also watch your distance from the target. If you don't, you may move out of the range of the landing detector or crash into the surface, which assesses a penalty. If your distance gets out of line, you'll need to stop moving, realign your ship, and try again.

Halley Project has many nice features. The destination planet can often be spotted in a constellation by noticing an extra "star" which doesn't show on the included star map. As you get closer you may see this "star" move, which indicates that it is really a planet!

Astronomical distances are well handled by the "hyperspace" device which, though unrealistic, certainly moves things along. The ship is easy to pilot, it's even equipped with landing brakes which make a squealing sound when you apply them. The graphics, while rather uninspired, are adequate. In particular, planets and moons tend to be featureless.

The graphics of the planet surfaces are quite nice, although the surface of Tethys (a moon of Saturn) looks just like the sun-baked surface of Mercury. The planets do go through dark and light cycles. It can be quite disconcerting to be within 20,000 kilometers of Venus and not be able to see it except where it blocks out a star. Finally, the moons throw a shadow on the planet they circle when they pass in front of it.

The game has a couple of sound cues that could have been handled better. As you accelerate towards the speed of light, an alarm sounds and you automatically enter hyperspace. However, sometimes you may want to stay just under the speed of light for a particular voyage—and the alarm continues to sound.

Also, when you approach a planet or moon and get within 100,000 kilometers, a pitter-patter alarm starts. As you may have to orbit the planet for some time before a landing zone appears, this warning can drive you to distraction. The obvious solution of turning down the TV volume leaves you without some critical sound prompts for the landing zone.

The Halley Project is interesting at first. But I suspect that only a few players will ever finish the multitude of missions required to discover the final mission. There is an awful lot of work required for the rewards being offered.

WISHBRINGER

Infocom, Inc.
125 Cambridge Park Drive
Cambridge, MA 02140
(617) 492-6000
$34.95, 48K disk

Reviewed by Harvey Bernstein

Welcome to Festeron, a quaint little hamlet somewhere on the New England coast. This is a real nice place to bring up your kids. Except. . .

Except that Festeron has its dark side—a mirror-image town known as Witchville where Evil rules, Magick abounds, and the Elder Gods dwell. Even your boss Mr. Crisp, the town postmaster, is now the. . . .well, the less said the better.

This is where the action takes place in **Wishbringer**, the latest in a long line of excellent text adventure games from Infocom. As the game begins, it is up to you to deliver a mysterious letter to the old woman who runs Ye Olde Magick Shoppe at the outskirts of town.

Once she gets the letter, you are suddenly thrust into Witchville with an important and dangerous mission—rescue the old woman's cat, which has been kidnapped by a sorceress known only as The Evil One. Your only aid is the power of the stone known as Wishbringer. Once you find it, you will be granted as many as seven wishes to aid you in your quest.

In many ways, Wishbringer can be seen as a successor to **Sorcerer** and **Enchanter**. Wishes take the place of spells, of course. But your seven wishes only work if you have a proper item in your possession. In addition, each wish can be used only once, so it is critical that you not misuse or waste one.

According to Infocom, for every puzzle that can be solved with a wish, a logical solution exists. The game could be concluded without using any wishes at all. Well, if anybody has gotten past the Hellhound without using a wish, please write me care of **Antic** and tell me how it's done.

Wishbringer is Infocom's second attempt at an introductory level adventure, and as such it is considerably more successful than last year's **Seastalker**. Although written for novices, the prose is not in the least juvenile. Veteran adventure game players will not be challenged at all, although they will enjoy the story line, the wit and the inside jokes. Be sure to open the mailbox next to the white house.

And there is the challenge to earn a perfect score by completing the

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product reviews

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game sans wishes. But most of all, Wishbringer is an excellent attempt to bring new blood into the fold—those who previously have been unable or unwilling to get the most out of Infocom's finest. If you've been curious about Infocom text adventure games but never actually took the plunge, Wishbringer is the game for you.

MINDSHADOW

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Reviewed by Harvey Bernstein

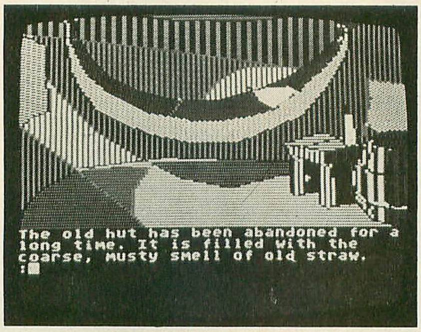
Mindshadow is a nice, old-fashioned graphic adventure game. You awake on a deserted island with a headache and no recollection of who you are or how you got there. The first (and most intriguing) puzzle in the game is finding your way off the island.

If you escape, Mindshadow takes you through the streets of Luxemburg and London on a quest after your own identity. After you pick up enough clues, you "think" them over. If you have been successful, you get to read a newspaper account of your own recent history.

There are several areas in which the hype for Mindshadow exceeds the reality. The parser is claimed to be state-of-the-art and supposedly understands prepositions like "the" or "a." So if you try a command like "sit down," the game responds with "You can't sit a down."

However, Mindshadow does contain one unique feature—macros. By pressing [SHIFT] along with a key from 1-6, you can call up frequently used commands—drop, load game, save game, etc. These are not reprogrammable, but do save typing time.

The documentation recommends paying close attention to the graphics, as not everything is mentioned in the text. That's fine, except sometimes it takes a Sherlock Holmes to figure out what is being pictured. I finished the game, and I *still* don't know what the Doctor is holding (a scalpel? monkey wrench? tire iron?).



There is also a serious bug that should have been eliminated before this game was turned loose. After anchoring the pirate ship, you will be prompted to turn the disk over. Go ahead and you will see the Queen's Navy. But be sure and flip the disk again before moving (although you are not prompted to) or you will crash the game and have to re-boot. It took two disks from Activision before I realized this was not just a fluke.

Despite the merchandising claims, Mindshadow is not state-of-the-art. But it's not a bad game either, just ordinary and a bit dated.

TWIRLYBIRD

Hardwood Software
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(609) 924-5323
$24.95, 48K disk

Reviewed by Jimmy Yu

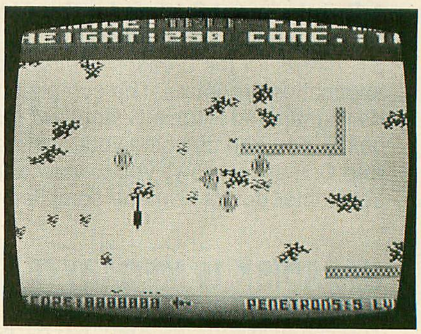
Twirlybird is an arcade game with some of the best graphics and music that I've come across in a while. It uses variable-speed, multi-directional scrolling, multiple character sets, Player/Missile graphics and display list interrupts.

Your mission is to pilot a swift little helicopter over a strange land littered with enemy defenses, and drop "Penetrons" down vents under which the enemy lurks. Meanwhile, enemy tanks and guns are trying to shoot you down and a metal-eating gas slowly fills the air.

The joystick controls your direction and speed, while the keyboard controls your altitude and the type of bomb you drop, and freezes the game. You can fly the helicopter anywhere inside a large, high-resolution, scrolling landscape of about 3 by 5 screens, which is different each game.

Helicopter movement is done superbly. There are 32 rotation positions in a full circle, plus about 10 speeds. The helicopter itself is animated with whirling rotors.

By pushing the joystick button, you can drop bombs or Penetrons. There are many objects on the ground which can be shot at for points—trees, moving tanks, bazookas, radar dishes, and laser pads.

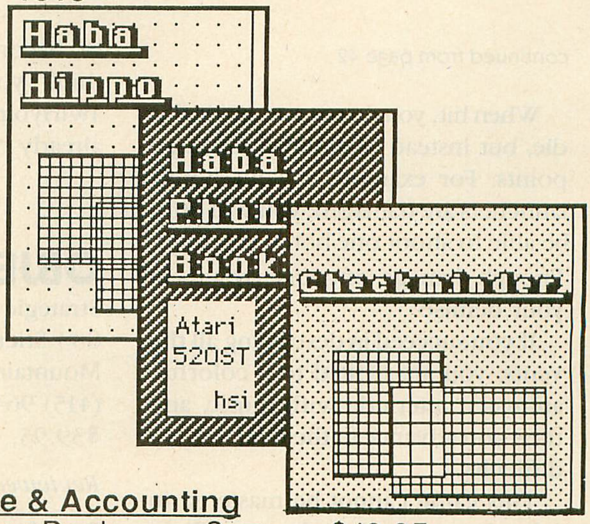


The higher your helicopter flies, the longer the bombs take to drop and the harder it is to hit anything. However, when flying at high altitudes, your helicopter is damaged much less from the enemy shells, and you can fly over the "force-field" walls that always seem to be in your way.

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Atari 520 ST
End Users Group, Inc.

15723 Vanowen St. Suite 326, Van Nuys, CA 91406 (818) 901-0714
Calif. Toll Free (800) 257-1313

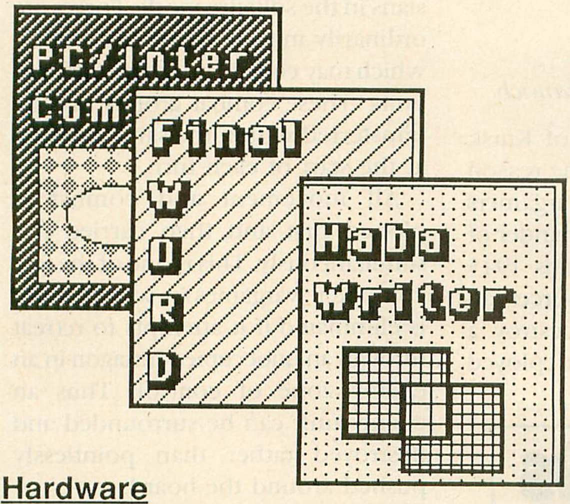


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product reviews

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When hit, you do not automatically die, but instead accumulate damage points. For example, if your bomb launchers are damaged, you will only be able to shoot one bomb at a time. Enough damage, of course, results in your demise.

If you succeed in destroying all the vents, you are treated to a colorful, animated interlude with music, and then you advance to the next level of difficulty.

This game cannot be mastered in a few hours. It takes plenty of flight time to become dextrous enough to hit your targets accurately. I've only made it to the second interlude.

Like almost all games, Twirlybird tends to get a bit repetitive. Also, once in a while the display list interrupts which create much of the color seem to become misaligned. However, I think you'll find yourself playing Twirlybird for a good long time. It's already one of my favorites!

OBJECTIVE: KURSK

Strategic Simulations, Inc.
883 Stierlin Rd, Bldg. A-200
Mountain View, CA 94043
(415) 964-1200
$39.95, 48K disk

Reviewed by Dr. John F. Stanoch

Boardgames of the Battle of Kursk have long been popular. One reason for the topic's interest to wargamers is its challenge for the commander of the German side. During this 1943 battle, two elite German forces attempted to encircle and destroy a much larger Russian force deployed 70 miles around the city of Kursk.

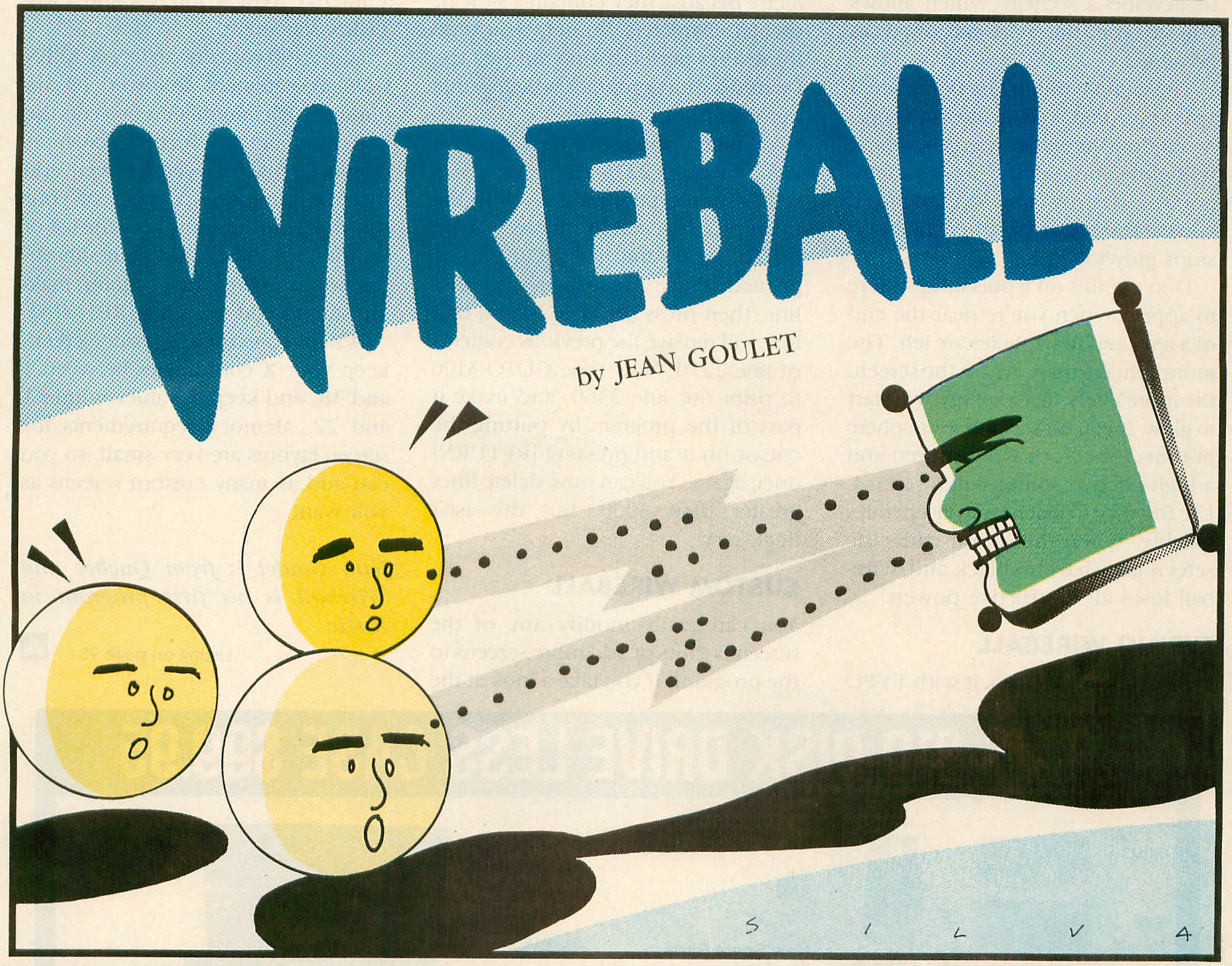
The Russians learned of these plans and prepared diligently for the offensive. They constructed a complex pattern of minefields, behind which waited dug-in troops bolstered by fresh reinforcements from the east. SSI's **Objective: Kursk** gives a player the opportunity to command the southern arm of the German pincer.

The computer controls the Russians in the solitaire mode. Forces are ordinarily moved as combat groups, which may contain up to five different units. These combat groups may be transferred within the same division at the start of each turn.

All movement and combat is plotted first and then carried out simultaneously. This is one of the few computer wargames in which a unit is eliminated if it attempts to retreat through an unoccupied hexagon in an enemy zone of control. Thus an enemy unit can be surrounded and destroyed rather than pointlessly pushed around the board.

The rulebook is concise, clear and only six pages long. I found that I was able to absorb most of the rules in only two readings. But I feel that a map with all of the initial unit placements should have been provided.

The game is long and might become tedious for some players. Also, the situation it accurately simulates is desperate, at best, for the German player. However, if you are like myself and many other wargamers who have tried repeatedly to win as the Germans in paper boardgame versions, you should find Objective: Kursk a welcome addition to your computer wargame library.



You'll feel like Spiderman as you shoot wires to zap your creature around the screen, eating dots and escaping the deadly touch of enemies. This abstract one-player arcade game has six screens and can be customized with a minimum of programming. The BASIC program works on all Atari computers of any memory size, with disk or cassette.

Your joystick controls a creature we'll call Wireball. It looks sort of like a surrealistic ladybug. Wireball must eat all the green spheres on the screen while avoiding two enemies. There's an enemy shaped like a squashed dollar sign that goes bouncing all over. It's harmless—except when Wireball accidentally glides a wire right into it at high speed.

The other opponent looks like R2-D2 disguised as a fireplug. It homes in on Wireball's position in implacable zombie style. At the higher-level screens, this foe chases Wireball a lot faster. Therefore, it will become essential to rely on Wireball's only mode of fast transportation . . .wire gliding.

A wire automatically whips itself out of Wireball if there's a visible object in the direction you're pointing the joystick. You want to speed Wireball around by wire whenever possible, because you get extra points for wire travel distance.

When you choose a joystick direction, the program searches along the path from your present position. If you are next to any object, you will move onto that space and enjoy (or suffer) the consequences. Otherwise, the program will continue to search along that path until it either finds something in the way, or reaches the edge of the screen. The wire then unfurls and Wireball scoots onto the object. If nothing is found in the path, there will be a delay before you move over one space. If you land on a sphere, it will disintegrate and increase your score. If you attempt to take over an enemy's space, Wireball will fail and die.

The score is updated only when you complete a level or die. The completion of a level will net you 500 points and increase your supply of Wireball lives, which is displayed at the top left. Each level presents a different layout, and the follower enemy

continued on next page

speeds up. In many cases, your only way out of a tight situation will be with the wire. You'll find it necessary to develop a strategy which allows you to use the wire as often as possible.

The game wouldn't be complete if you never had a chance for revenge. At random intervals, a green sphere will glow and pulsate. You can temporarily destroy your opponents if you eat the pulsating sphere before it stops glowing.

Don't count on a pulsating sphere to appear when you're near the end of a level and few spheres are left. The more spheres there are on the screen, the more likely that a sphere will start to glow. If you eat the pulsating sphere in time, the screen will turn red and a high-pitched sound will be heard. Use the wire to reach faraway enemies quickly. When the sound ends, the screen goes back to black and Wireball loses all destructive powers.

TYPING WIREBALL

Type in Listing 1, check it with TYPO II and SAVE a copy before you RUN it. However, lines 2270 and 2360 could be a real headache to type correctly because they contain a slew of special characters. To help you type these lines perfectly on your first try, I wrote a short program which prints out these lines for you.

So when you type Wireball, you can omit lines 2270 and 2360 if you wish. Then type Listing 2—with the main program still in memory. Type GOTO 3000, and line 2270 will be printed. Place the cursor over that line, then press [RETURN], and that line will replace the previous contents of line 2270. Now type GOTO 3100 to print out line 2360, and make it part of the program by putting the cursor on it and pressing [RETURN] once again. You can now delete lines greater than 3000, but this isn't necessary.

CUSTOM WIREBALL

You can easily modify any of the screen layouts or add more screens to the program. If you take a look at the end of the program, you'll see six blocks of PLOT and DRAWTO statements. Each block is isolated between a line like REM SCREEN x and a RETURN statement.

Line 2490 contains an ON SCREEN GOSUB statement followed by six numbers. Each number represents the line number at which a screen is drawn. To make a seventh screen, add the beginning line number of your screen layout subroutine to the list of six numbers. Then add your subroutine to the end of the program, making sure to end it with a [RETURN].

When constructing your screen, keep your X coordinates between 1 and 38, and keep Y values within 1 and 22. Memory requirements for screen layouts are very small, so you can add as many custom screens as you want.

Jean Goulet is from Quebec and Wireball is his first program in Antic.

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U.K. SOFTWARE SHOWDOWN

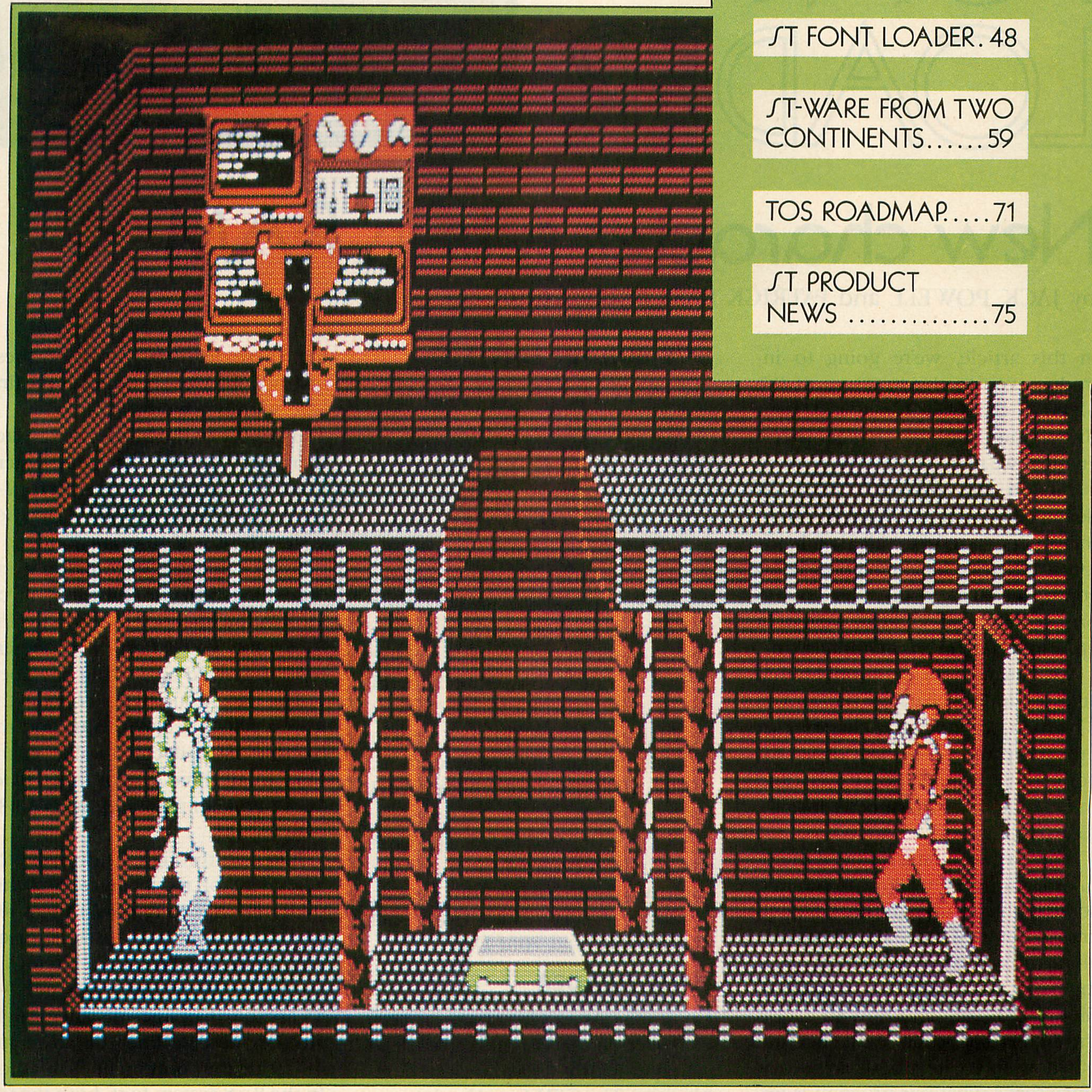
ST

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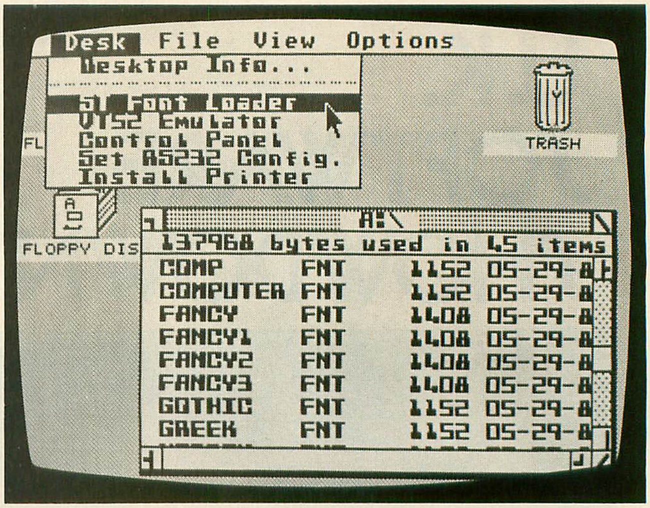
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Brataccus

ST FONT LOADER



New character sets in RAM

by JACK POWELL and PATRICK BASS of the **Antic** Staff

In this article, we're going to introduce you to the structure of the 520ST's character fonts and then show you how to change them. Frankly, we're going to have to cheat a bit on this project. The GEM documentation from Digital Research, Inc. refers to a VDI call that loads fonts, but the documentation is incomplete. Until we discover how to properly use this VDI call we'll do a little direct memory manipulation.

We'll create a small C program that takes a standard character set from an 8-bit Atari, reshuffles this character set into the proper font data order for both our 8×8 and 8×16 ST fonts, and then stuffs this data directly into ST font data memory.

Since we're relying on fixed memory locations, we're likely to run into some problems upon future GEM upgrades. But we'll shove ahead, because along the way we'll learn about opening windows, disk access from GEM, file-select boxes, and how to access the Supervisor Mode. We'll also find out how to create a desk accessory, since that's what our program is going to be.

ST'S BUILT-IN FONTS

The Atari ST has three character sets—or "system fonts"—that are loaded into RAM upon power-up.

The characters in each set are identical and are shown in the table on page 63 of the *Atari ST Logo Manual.* The only difference between the sets is the size of the character "cells"—the bit-blocks used to define the characters. For example, in the Atari 8-bit machines, the only cell size is 8×8, or one byte by eight bytes. In the ST there is an 8×16 system font for high resolution, an 8×8 system font for medium and low resolution, and a 6×6 system font which is used for icon labels.

All fonts designed for the GEM system require a certain format and are made up of four parts—Font Header, Character Offset Table, Horizontal Offset Table, and Font Data.

FONT HEADER

Unlike the Atari 8-bit character sets, characters in the ST fonts can each be different widths and of various complexities. The GEM Font Header contains 87 bytes of information describing these features. Most of these instruction bytes are found as the first byte within a word.

Bytes 0-1 of the header are a "face identifier" number. All three system fonts use the number one. Bytes 2-3 are the font "size" in points. The 8×8 system font is a 10-point font.

Bytes 4 through 35 contain a string describing the name of the font. If you look in the memory location for the 8×8 font, you'll find "8×8 system font" followed by a string of zeroes.

The next four bytes contain the lowest ASCII decimal value and the highest ASCII decimal value in the font. In all three system fonts, bytes 36-37 contain zero and bytes 38-39 contain 255.

Bytes 40 through 49 describe the alignment of the characters within their cells. (See *Figure 1.*) Bytes 40-41 hold the "top line" distance, measured from the bottom line. Bytes 42-43 are the "ascent line" distance, 44-45 are the "half line" distance, 46-47 are the "descent line" distance, and 48-49 are the "bottom line" distance. In the 8×8 system font, both the top line and ascent line are 6, the half line

is 4, and the descent as well as the bottom line are 1.

Bytes 50-51 contain the width of the widest character in the font. This is the actual character width and not the cell width. In the 8×8 system font, the widest character is 7. The following bytes, 52-53, hold the widest cell in the font. Naturally enough, the widest cell in the 8×8 system font is 8.

Bytes 54-55 contain the left offset and bytes 56-57 the right offset of the character with the cell.

Bytes 58-59 contain the number of pixels with which to thicken a character. The 8×8 system font, when widened, will thicken by one pixel. You may choose your underline width (in pixels) at bytes 60-61. The 8×8 system font uses 1.

Bytes 62-63 and 64-65 are the "lightening" and the "skewing" masks, respectively. The lightening mask is used to "grey" letters. Skewed letters have an italicized effect. In all three system fonts, both masks are $5555.

Bytes 66-67 contain flag bits. 66 will be zero, and bits 0 through 3 of 67 contain the following flags:

bit 0 set if using default system font
bit 1 set if horizontal offset tables should be used
bit 2 set if byte orientation within a word is high-low
bit 3 set if using a mono-spaced font

If you look at these flags while using the 8×8 system font, bits 0, 2 and 3 will be set.

The next three words in the font header are pointers. Bytes 68 through 71 contain the starting address of the horizontal offset table. Bytes 72 through 74 point to the character offset table, and bytes 76 through 79 point to the font data itself.

The font data may be contained in arrays of varying sizes. In the 8×8 system font, there are 256 cells, each of which are one byte high by eight bytes tall. This can also be described as an array of 256 by 8 bytes. The next four bytes in the font header tell us the width and height of the font data array—or "form".

Bytes 80-81 contain the form width (256 in the 8×8 font) and bytes 82-83 contain the form height (8 in the 8×8 font).

The final four bytes in the font header are a pointer to the address of the next font.

CHARACTER OFFSETS

The Character Offset Table tells the computer where to find each character in the font data by its offset. This permits individual characters of different widths. In the system fonts, each cell is eight bits wide, so a look through the Character Offset Table will reveal a consecutive string of words, each eight more than the last: $0000, $0008, $0010, $0018, $0020, etc. . .

HORIZONTAL OFFSETS

The Horizontal Offset Table gives additional information for added positive or negative spacing of individual characters. It is not used for any of the system fonts and will not be accessed unless its flag bit is set at font header byte 67.

FONT DATA

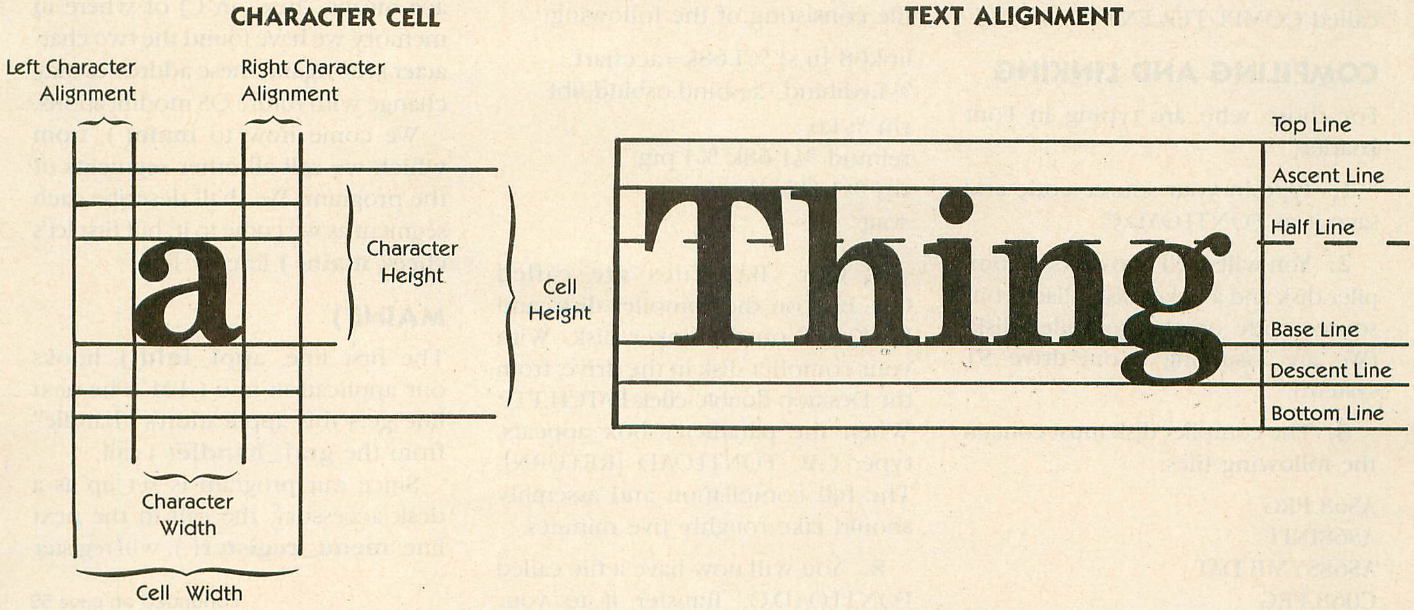
Font Data is the actual bit data that creates the characters in the font. The ST Font Data is arranged quite differently from the Atari 8-bit machines. For example, the data for the letters A and B in the 8-bit machines is arranged so that the first byte, when seen in binary, is the top row of the letter A. The second byte describes the second row of the same letter, the 9th byte is the first row of the letter B, and so on through the set.

But in the ST font data, the first byte would describe the top row of the letter A. The second byte describes the top row of the letter B. The next byte describes the top row of the letter C, and so on.

The actual order of the letters in the ST set can be seen on page 63 of the *Atari ST Logo Manual*. The first byte

continued on next page

Figure 1



of font data is the top row of the "space" or blank. The next byte is the top row of the up arrow, the next is the top row of the down arrow, etc. Since there are 256 characters in the font, the second row of the letter A, for example, will be offset 256 bytes ($100) from the byte representing the top row. This offset value can be found in byte 81—the form width byte—of the font header.

ST FONT LOADER

Until a full-featured, commercial C becomes available, **Antic**'s ST C listings will be written in Alcyon C which is in the Developer's Kit available from Atari for $300. This may seem pricey to you, but remember that the kit includes invaluable documentation for advanced ST programmers, an assembler, an editor, a debugger, and all the proper link files.

If you don't have the Developer's Kit, we've placed the runable object code along with the source code on our 5 1/4-inch monthly disk under the filenames DESK3.ACC, and FONTLOAD.C. Please see the sidebar on page 57 on porting 8-bit Atari files to the ST.

Since the program requires at least one character set file on an ST disk, you'll also need to port (or download) a standard Atari 8-bit character set. Several such character sets are on the ArtDOS disk, available from the Antic Catalog ($10, PD043). Also, this issue's monthly disk includes a sample font called COMPUTER.FNT.

COMPILING AND LINKING

For those who are typing in Font Loader:

1. Type in your source code and save it as FONTLOAD.C.

2. You will need two disks: a compiler disk and a linker disk. Place your source code on the compiler disk. (We are assuming a one-drive ST system).

3. The compiler disk must contain the following files:

AS68.PRG
AS68INIT
AS68SYMB.DAT
C068.PRG
C168.PRG
CP68.PRG
DEFINE.H
GEMDEFS.H
OSBIND.H
OBDEFS.H
BATCH.TTP
RM.PRG
WAIT.PRG
CAC.BAT (User-created file, see below)

4. The linker disk must contain the following files:

ACCSTART.O
AESBIND
VDIBIND
LIBF
OSBIND.O
LINK68.PRG
RELMOD.PRG
BATCH.TTP
RM.PRG
WAIT.PRG
LINK.BAT (User-created file, see below)

5. The BATCH.PRG file on the compiler disk will look for a text file with a .BAT extender consisting of the following:

```
cp68 %1.c %1.i
c068 %1.i %1.1 %1.2 %1.3 -f
rm %1.i
c168 %1.1 %1.2 %1.s
rm %1.1
rm %1.2
as68 -l -u %1.s
rm %1.s
wait
```

6. The linker disk will need a .BAT file consisting of the following:

```
link68 [u,s] %1.68k=accstart,
%1,vdibind, aesbind,osbind,libf
rm %1.o
relmod %1.68k %1.prg
rm %1.68k
wait
```

7. Our .BAT files are called CAC.BAT on the compiler disk, and LINK.BAT on the linker disk. With your compiler disk in the drive, from the Desktop double-click BATCH.TTP. When the parameter box appears, type: CAC FONTLOAD [RETURN]. The full compilation and assembly should take roughly five minutes.

8. You will now have a file called FONTLOAD.O. Transfer it to your linker disk. Double-click on the linker version of BATCH.TTP and, in the parameter box, type: LINK FONTLOAD [RETURN]. The full linkage should take about five minutes.

9. You now have a file called FONTLOAD.PRG. But, since this program is designed as a desk accessory, it will not run directly from the Desktop. Rename the file DESK3.ACC, then transfer it to a *backup copy* of your power-up disk, along with at least one font file with a .FNT extension. Boot your system with this disk and Font Loader will be found in the drop-down Desk Menu.

Click on ST Font Loader and an Alert Box will announce itself. Click on Proceed and you'll be reminded to put your font disk in drive A. Click on See Disk and the File Selector Box appears showing your fonts. From this point on, everything is self-explanatory.

And, now that you have the program successfully up and running—you do, don't you?—we'll take a thorough look at the listing itself.

PROGRAM TAKE-APART

Right after the remarks and the #include files is an external reference to **gl_apid**, which is the global application ID for the GEM Desktop.

Next come three blocks of variable definitions. Look carefully at the middle two *long* definitions, **char8x8** and **char8x16**. These are the addresses in hexadecimal (the "0x" preface means "hex" in C) of where in memory we have found the two character sets. Again, these addresses may change with future OS modifications.

We come now to **main( )**, from which we call all other segments of the program. We shall describe each segment as we come to it, but first let's check **main( )** line by line.

MAIN( )

The first line, **appl_init( )**, hooks our application into GEM. The next line gets this application's "handle" from the **graf_handle( )** call.

Since our program is set up as a desk accessory, the call in the next line, **menu_register( )**, will register

continued on page 52

FONT LOADER
continued from page 50

our program with the GEM Desktop by giving GEM the ID of the Desktop **(gl_apid)** and a string containing the title we want in the drop-down Desk Menu. **menu_register( )** returns a number that will uniquely describe this accessory to GEM should we ever want to click on it from the menu. Cunningly, we call this value **menu_id**.

The next call, **wind_get( )**, is a multi-purpose call that here will return the size of the desktop and place the values into **xdesk**, **ydesk**, **wdesk**, and **hdesk**. Before finishing **main( )** we set our window handle to a negative number so we won't mistakenly use another window's number before we are assigned one of our own. To actually perform the program, we jump to **fontable( )**.

OPEN_VWORK( )

Now, we open a virtual workstation, by first filling a **work_in** array with default values, copying the handle number into another variable to pass to GEM, and then performing the **v_opnvwk( )** call, which will return a world of information about what type of terminal we are working on in array **work_out**.

SET_CLIP( )

The **set_clip( )** section defines a rectangle that GEM will not draw outside of. Any line drawn inside this rectangle will appear, but when the line meanders outside, it gets "clipped." We pass this routine the x,y coordinates of the upper left corner of the rectangle and the "w" width and "h" height (in pixels).

OPEN_WINDOW( )

open_window( ), will create and display a window on the desktop. In the first line, **wind_create( )** will create (but NOT display) a window that has its attributes in parameter one, and its maximum size in parameters two, three, four, and five.

This window's only attribute will be the Name line at the top. Other attributes could include a Move-box line, Sliders, Sizing boxes and so forth.

The **wind_create( )** call will return a window ID number which we put into **wi_handle**. To actually write the name of the window on the Name line, we use **wind_set( )**.

graf_growbox( ) is optional because all it does is draw the rapidly expanding box outline that precedes the opening of the window itself.

Finally we get to **wind_open( )**, which opens our window onto the screen. In this case we pass the call the handle of the window we want opened, and its size when first opened—which is not necessarily its fullest size.

Last call in this section is **wind_get( )**, which here will return the size of the workspace inside the window we just created and place those values into **xwork** through **hwork**.

DO_REDRAW( )

Whenever our application needs to redraw the screen it goes, logically enough, to **do_redraw**.

GRECT t1, t2 is a "structure" that is defined in the "obdefs.h" #include file. Since we don't have space to describe how structures work in C, remember this is where GEM decides if two rectangles overlap, and how much of each one to re-draw. When GEM is finished drawing our single rectangle on top of everything else on the desktop we perform **do_font( )** to transfer our characters.

DESK ACCESSORIES

We need a pause to discuss how a desk accessory differs from an application program run from a file icon.

Accessories are handled very much like the vertical blank interrupts in the Atari 8-bit computers. That is, sixty times a second, the 6502 processor stops what it is doing and runs off to stuff colors into the hardware registers, or other sundry chores.

In the 520ST, 200 times a second the Dispatcher in the Screen Manager routine checks each of the desk accessories to see if they need service. If service is desired, control is passed to the desk accessory. When a user clicks a menu accessory item, GEM sends a message to the accessory telling it the user has requested the accessory be activated.

The next time the accessory is polled, (200 times a second), the message is received and acted on. The accessory remains active until closed physically or until its job is done and a closure is simulated by software.

FONTABLE( )

Now we come to **fontable( )**, which is called from **main( )**. This is the routine where the program will spend most of its time waiting for a message.

We first start an endless loop, which runs while **TRUE** does not equal false (and that hardly ever happens). **evnt_multi( )**, waits for a multiple combination of "events". Events can include things like key presses, mouse movements, or reception of a message—which is what we are waiting for here.

The list of parameters following the **evnt_multi( )** call are mostly not needed. Here we only pass it the type of event we want (a message—**MU_MESAG**), and the place to put the message received (**msgbuff**).

The next **wind_update( )** tells GEM we are about to update the screen. Then we test if the event was a message and, if not, drop to the last **wind_update( )** which tells GEM to continue drawing anything we stopped during the first **wind_update( )**.

However, if the event *was* the reception of a message, control passes to **switch( )**. The switch. . .case structure performs like multiple IF. . .THENs. There are several possible messages and the type of message is contained in element zero of **msgbuff**, which we pass to **switch( )** for testing.

Of the three possible messages that we are concerned with, **WM_REDRAW** is sent to the accessory to start drawing if needed. **AC_OPEN** tells the accessory the user wants that accessory opened for inspection. **AC_CLOSE** means the user has requested the accessory be cleared from the desktop.

DO_FONT( )

Finally, we reach the routine that performs our work for us. Let's define

what we need to do first. We need to select a font file from the disk, read it in, decode the byte structure and stuff the character images directly into the ST font tables in RAM. Easy, huh?

The first call is **clear_window( )**, which calls a routine below **do_font( )** to erase any information inside the window we just created and opened. The next three lines present the title, wait a little bit, then prompt the user to insert the fonts disk into drive A (see the strings typed in at the top of the listing under the "char" definitions).

Next we come to **fsel_input( )**, which is a completely self-contained call to access the disk directory. You've probably seen the type of box this produces every time you load or save a file in a GEM program.

We need to pass this routine the "path" (which directory we want to see), the "filename" (which will appear in the file slot in the upper right portion of the file select box) and the "button"—actually the address to store the value of the button selected.

First we check to see if the Cancel button has not been selected—**if(button != 0)**.

Graf_mouse(M_OFF, 0x0L) turns off the mouse cursor and **clear_window** clears the window to erase any part of the file selector box left in the window.

Fopen( ) opens the filename gathered from the file selector above (the second parameter is an unused dummy). It will also return a "file handle", or identifier similar to the handle used to identify which screen we are working on. (This is much like the device number on Atari 8-bits). If no file is found, a negative number is returned. The following line checks for this.

Fread( ), will read bytes from a file. We pass it the file handle, the maximum number of characters to read, and where to put the characters it reads—in this case a place called **file_buffer**. **Fread( )** will return a number we call **done**, which is the number of bytes actually read in.

At this point we have read the Font file into memory, so we close the file with **Fclose(file_handle);**.

ENTERING SUPERVISOR MODE

Since we need to access protected low memory where the character font data is stored, we have to switch into Supervisor Mode.

There are at least three ways to enter Supervisor Mode on the 520ST. The process we are going to use here—Bios call #38—is a special case that when called and passed the address of a routine, will enter Supervisor, execute the routine passed, then exit Supervisor and return to the user. So here we call **bios #38**, and pass it the address of the **configure( )** routine which rearranges the stored Atari 8-bit character set into 520ST font format, then pokes that new set into the system font.

After we return from **configure( )**, we turn the mouse shape back on with **graf_mouse(M_ON, 0x0L);**, present a little box that says thanks, close the window we opened previously, draw a quick shrinking box outline, and then delete the window completely.

The last three lines here simulate a "close accessory" message, after which we return to the **event_multi( )** section above.

CLEAR_WINDOW( )

Next follows a short section that contains the instructions to opaque the inside of the window we desire. Otherwise our window work area will appear transparent and we will see the desktop within it. The three **vsf_** calls describe the style and color of the interior—in this case, solid white. The GEM routine, **v_bar( )**, places the fill inside the window described by rectangle "temp".

CONFIGURE( )

We've saved the best for last. **configure( )** is the meat and potatoes of Font Loader.

Before switching fonts, we need to rearrange our old font in two ways. As mentioned earlier, the order of the characters is different, and the order of the character bytes within the whole font array is different. To accomplish this, we use two loops. The outer loop rearranges the character order and the inner loop shuffles the byte order of each character for both the 8 x 8 set and the 8 x 16 hi-res set.

We first declare **point1** and **point2** which will point to the two system character fonts in memory. In the following algorithm, **l** represents the source character we're choosing from and **i** represents the destination character we're working on.

The outer loop will transfer 128 characters from the "source" 8-bit format into the "destination" ST format. Basically, if the character is less than 32, then add 64 to it. If the character is between 32 and 96, then subtract 32 from it to get the index location of the character within the source array.

Since we're dealing with two destination font arrays—8 x 8 and 8 x 16—within the inner loop, we step through all possible 16 scan lines of each high resolution character image then divide by two for the index into the 8 x 8 array. This is done with **(j/2)**, where **j** is an integer.

The following two lines find the offset within both destination fonts in which to place the individual character bytes of the source font. The final two lines actually transfer the data.

If this algorithm seems a little complicated, you might try plugging in some values and following them through on paper.

ST Font Loader was written primarily as a demonstration of GEM programming techniques. We've found that it works on most applications that maintain the GEM menu bar. There is one minor problem. If you want to return to the system font, you must re-boot the computer.

Listing on page 100

HIPPO GOES FOR THE ST

HIPPO RAMDISK™

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HIPPOSIMPLE™

The powerful, flexible, easy-to-use database. Keep track of business contacts, sales prospects, phone numbers, club membership lists, even budgets and accounts receivable and payable. Features easy-to-use mouse-based screen editor, sort (up to 16 levels), merge, data compression, mathematical sum, and over 10 programmable commands. Advanced record select (up to 16 programmable relationships). Use any size mailing labels, envelopes, or letterhead. Use predefined templates or design your own. Helpful on-line manual.

$49.95

HIPPO EPROM BURNER™

Program your own EPROMs. Includes hardware and software which allows user to read, verify, and burn most popular types EPROMs including 2764, 27128, 27256, and 27512 s. All necessary voltages generated on board. Connects to printer port. EPROM cartridge boards for the ST available separately.

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HIPPOSPELL™

The fastest spelling corrector for the ST. Compatible with ST editors and word processors including Express, STWriter, and GEMWrite. Comprehensive word frequency statistics. 30,000 word dictionary includes prefixes and suffixes. User-defined word dictionary (up to 25,000 words). Suggests correct spellings. Helpful on-line manual.

$39.95

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It understands English, thinks fast, and knows over 35,000 useful, intriguing facts. Uses an AI parser to understand and answer questions in plain English. A brief listing of topics includes a toll-free number directory, world time zone and area code info, geography, loan calculations, metric conversions, calories of foods, historical trivia, academy awards, olympic winners, world series, super bowl, NBA, NFL, etc.... Helpful on-line manual.

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ST LISTINGS ON MONTHLY DISK ...and how to get them

by CHARLES JACKSON, **Antic** Program Editor

For those ST owners who do not yet own a C compiler, but are eager to try out **Antic's** C language listings, we are now including the executable object code on the **Antic** Monthly Disk. All disk files with extenders of **.PRG**, **.TOS**, **.TPP** and **.ACC** are compiled ST programs, ready to be transferred to an ST disk and executed. Given enough disk space, we will also include the source code. Source code files will have a **.C** extender.

PORTING FILES

Before using an ST program, you must transfer it to an ST disk. This process of transferring files between computers is called "porting."

To port a file from the Antic Monthly disk to an ST disk, you'll need:

- A telecommunications program for the ST which supports XMODEM file transfers. **Chat** (version 1.1) will work).
- A similar program for your 8-bit Atari which supports XMODEM file transfers. **Chameleon** or **BackTalk** will work. Unfortunately, **HomeTerm** won't do the job because it translates all carriage returns into ATASCII value 155. Also, *don't* expect to succeed at ST porting with any version of AMODEM.
- An Atari 850 Interface Module with a modem cable—RS-232 to D-9.
- An RS-232 to RS-232 cable.
- A Null Modem connector.
- You may also need a Gender Changer.

See *Figure 1* for proper configuration of the cables.

IMPORTANT: Both modem programs must be configured similarly. If your 8-bit software is set for 1200 baud, your ST software also must be configured for 1200 baud.

You may use any baud rate which is supported by both programs.

Additionally, BOTH programs must be set for 8-bit (binary) file transfers.

Once both computers are linked together and both modem programs are running, you may begin the file transfer. You can also reverse this procedure to transfer files from ST disks to your 8-bit machine.

WALK-THROUGH DEMO

Let's walk-through a sample file transfer. We'll use BackTalk on an 8-bit machine, and Chat on the ST.

Configure BackTalk for 1200 baud, with Full Duplex and ASCII translation. Press [SELECT], choose the XSEND option, select XMODEM protocol and enter the name of the file you wish to port.

From the ST desktop, double click on CHAT.PRG. Make sure Chat is running at 1200 baud. Use the [F7] function key to change baud rates, if necessary. Now press [F6] and click on the RECEIVE button. When the file selector box appears, press [ESCAPE] and type the name of the file to receive. Press [RETURN] or click on OK.

To begin the transfer, press the [F3] key on the ST and press [START] on the 8-bit Atari.

When you're done, remember to press the ST's [F10] key to close any open files. You'll also want to move your ported program out of the SUPPORT folder and onto another disk, where you can make backup copies.

Occasionally some versions of XMODEM will append extra "garbage" characters to your files. Text files, such as C listings, are particularly susceptible to this problem. If your implementation of XMODEM appends garbage characters to your source code, you must remove those characters with a text editor before compiling the program.

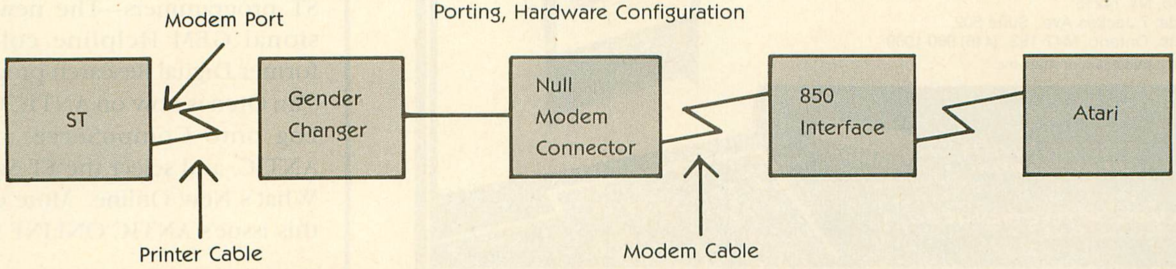
MANUFACTURERS

CHAT
(See review in this issue)

BACKTALK
Antic Catalog
$19.95, AP154

CHAMELEON
Antic Catalog
$19.95, AP113

Figure 1
Porting, Hardware Configuration



Antic
The ATARI Resource

Coming Next Month

PRINTERS

- T-Shirt Iron-On Program
- Printer Reviews: Epson, Star, C.Itoh, Okidata
- Best Color Printer for Atari?

Two DOS 2.5 Enhancements

DEGAS: ST Graphics Breakthrough

PRO ST HELPLINE

ST programmers—The new Professional GEM Helpline column by former Digital Research programmer Tim Oren is now on ANTIC ONLINE. Log onto CompuServe, type GO ANTIC, and select the ST Section or What's New Online. More details in this issue's ANTIC ONLINE story.

ST-WARE FROM TWO CONTINENTS

Is U.K. now in the lead?

by GIGI BISSON, **Antic** Assistant Editor

An army of ST software is on the march, advancing swiftly on the market from *two* continents . . .

Antic just returned from the huge PC World Show in London—where "Popular Computing Weekly" (the "InfoWorld" of the U.K.) reported, "The new 520ST stole the show with strong software support . . .over 170 titles are on the way."

British developers are not so "IBM-locked" as their American counterparts. They're also used to writing for the Sinclair QL, a 68000-based machine. While many stateside developers have just been waiting and seeing about the ST, our British cousins have been producing a wide variety of ambitious ST programs.

The following products were in various stages of development at our press time in October. For each program, we specify whether **Antic** has seen a FINAL Marketed version, near-final BETA Test version, earlier ALPHA Test version, incomplete DEMO segment, or PRESS Release announcement.

Prices are given in U.S. dollars when that information is available. Otherwise the prices are listed in English Pounds (£), currently worth about $1.33 each.

ANTIC LANGUAGES (METACOMCO)

Metacomco, developer of Amiga DOS for Commodore International and a BASIC interpreter for Digital Research, Inc., is a leading supplier of systems software and proprietary languages for 68000-based computers. The following professional development tools will soon be available from the Antic Catalog and Atari retailers.

Assembler/Editor/Linker—High-specification macro assembler, originally developed for the Amiga. $79.95. BETA.

Pascal—Full ISO 7185 standard Pascal compiler already widely used on the Sinclair QL. Compiles to native code. $99.95. ALPHA.

Lattice C—Originally developed for 8086/88 micros, follows C features and functions as described in Kernighan and Ritchie's standard text, "The C Programming Language." $149.95. ALPHA.

Cambridge LISP—ST implementation of the LISP used in mainframe artificial intelligence research worldwide. $199.95. PRESS.

IBM PC Cross Development System— Includes cross assembler, C cross compiler and linker. (Price not available.) PRESS.

MORE LANGUAGES

MODULA-2—A highly structured successor to Pascal, includes a full screen editor linked to a compiler. **UCSD Pascal**—Industry standard Pascal includes a screen editor and utilities. Both are now available for £195 each. TDI, 29 Alma Vale Road, Bristol BS8 2HL, England. FINAL.

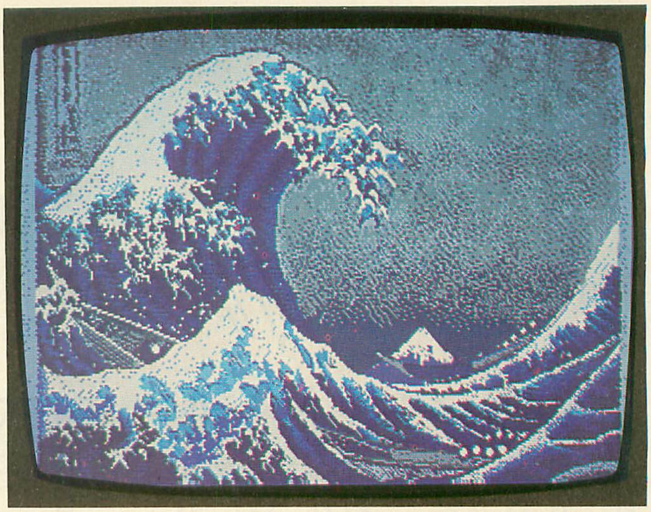
continued on next page

Pro FORTRAN 77—NSI Standard Fortran compiler for 16-bit 68000 microcomputers, from Prospero Software of London. Under $300. BETA.

C Compiler—A small C without floating point. But it includes GEM bindings, assembly editor and linker. $59.95. FINAL. GST also has a CP/M 2.2 emulator in final BETA test.

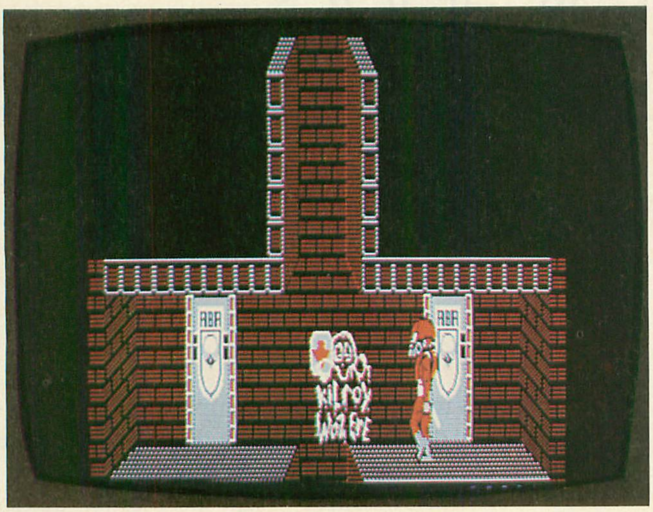
ENTERTAINMENT SOFTWARE

Brataccus—Graphic adventure that looks and handles like an interactive cartoon. You use a mouse, joystick or the keyboard to control the protagonist, Kyne, as he jumps, rides elevators, duels with robots, walks smoothly—in richly animated sequences. Includes a 78-page novel illustrated by famed fantasy artist Roger Dean to "prepare you for the world of Kyne"—an oppressive metropolis replete with video cameras and thought police. DEMO.

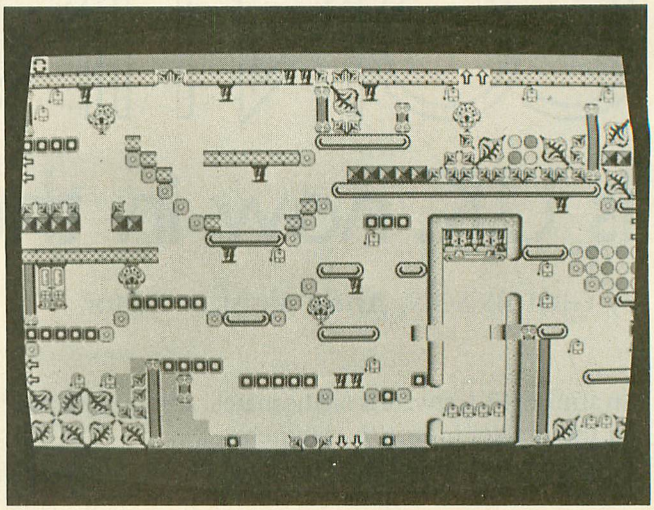


NEOchrome Art by Jerome Domurat

Colourspace—A psychedelic trip for your Atari, does for light what a synthesizer does for sound. Available for



Brataccus by Psygnosis Software Ltd.



Mission Mouse

8-bit Ataris in England now. ST version coming from Antic Catalog in early 1986. BETA.

Lost Kingdom of Zkul—Advanced adventure game with a J.R.R. Tolkien type plot. Takes many months to solve, according to manufacturer, Talent Systems of Glasgow, Scotland. Sinclair QL version sells for £24.95 as package with **West**—a cowboys and Indians game. FINAL

Mission Mouse—Multi-level platform game with multiple screens and animated sprites. Antic Catalog. DEMO.

Lands of Havoc—With 2,000 screens of mazes, beautiful music, and multitudes of characters, this "arcade adventure" is very difficult and very fast. Antic Catalog. FINAL.

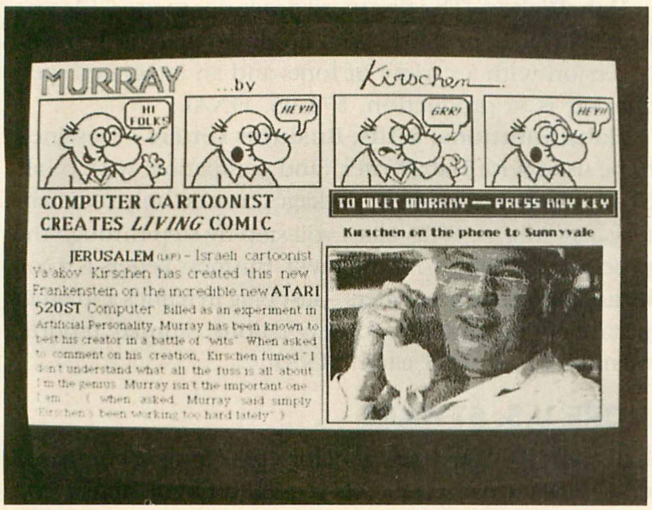
Murray and Me—One minute he was enjoying a lean pastrami in a deli, the next—POW, trapped inside a 520ST! Meet loveable Murray, a born loser who actually likes his classy address. After all, the rent's cheap and he has you to keep him company. Created by Israeli cartoonist Ya'akov Kirschen, Murray is the first of a new generation of ST "Biotoons"—computerized cartoon characters who utilize the memory and graphics ability of the ST to deliver



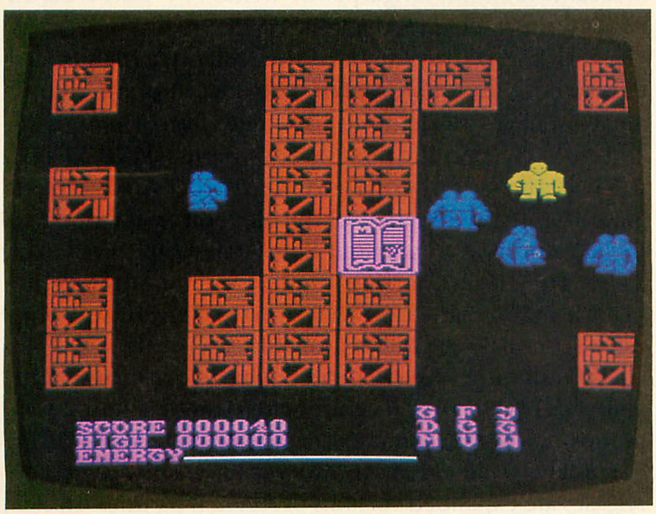
ST Writer



DEGAS — Art by Tom Hudson and John Bell



Murray and Me



Lands of Havoc

"personality without the price." Available in December from Antic Catalog. $39.95. BETA.

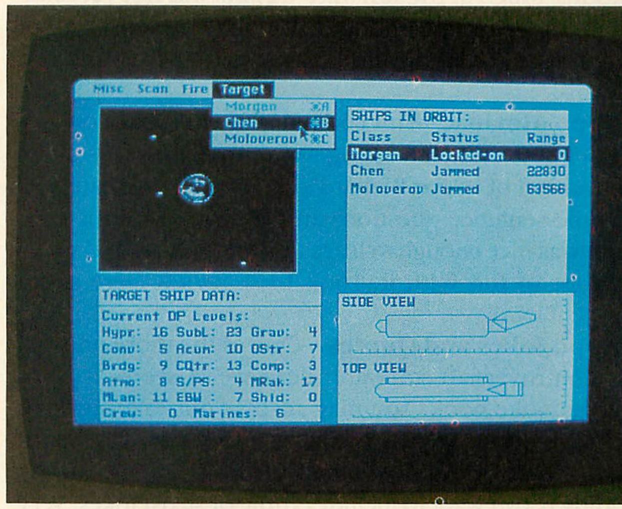
Mom and Me—When's the last time your computer made you feel guilty? Mom, a hilarious Jewish mother, will nag you until you roll on the ground in fits of laughter. (You might even start eating your vegetables, who knows?) Another ST Biotoon by Ya'akov Kirschen. Available in December from Antic Catalog. $39.95. BETA.

BUSINESS APPLICATIONS

AtariNet Mailbox—Electronic mail utility from Software Punch of Liverpool, England. BETA

Desk Diary—Desk/time management system and database. Antic Catalog. BETA.

K Calc—Kuma Software's spreadsheet calculator will be compatible for data transfer with other upcoming Kuma business packages—word processing, database and communications. £49.95. BETA.



Universe II

FlexFile—Talent Systems' database and report generator runs under GEM, handles mailing lists, personnel histories, credit control records, stock records, etc. BETA.

TimeLink—This "temporal database" was originally released for the Macintosh by SofTechnics of London. It allows you to do almost anything with information relating to time. $99.99. ALPHA.

Rhythm—Combination of spreadsheet and calculator functions lets you do what-if analysis, or use its number-crunching power as a programmer's calculator. Integrates with other standard GEM application programs. $49.99. BETA.

STaccounts—Small business accounting package from Silicon Chip Ltd. is written within GEM and includes a sales ledger, purchase ledger, stock control and nominal ledger. $299. ALPHA.

BOS Software—Atari Corp. has purchased rights to offer BOS (Business Operating System) a popular British operating system. BOS may soon be bundled with the ST or available as an option. BOS National offers a complete line of business software and 40 vertical applications pack-

continued on next page

ages including **BOS/Net**, a local area network operating system. However, BOS software titles are expensive—in the $500 range—and aimed primarily at corporations. FINAL.

Cash Manager—This business accounting package is one of the first in a series of BOS-compatibles from Towngate of Dorset, England. Towngate is sort of the Lotus Corp. of the U.K., with software widely distributed in 20 countries worldwide. FINAL.

Wasp—Printers Costing, a software package for professional print shops, is part of a library of Wasp vertical applications running under BOS that includes Vets & Farmers, Legal Accounting, Insurance Brokers and Real Estate Agents. FINAL.

AMERICAN HIPPO

But it's not only British ST software that's beginning to pour in. Hippopotamus Software, Inc. took the short drive from Silicon Valley to **Antic** and showed off their latest creations. Much of the software we saw was not yet finalized for market. But Hippopotamus assured us that all of the following titles would be available by the time you read this.

Hippo Almanac—This computerized almanac contains over 35,000 odd, intriguing—and sometimes useful—facts. A kind of "Poor Richard's" CD ROM, you can type in whole-sentence questions and receive swift answers. Hippo was nice enough to leave this one behind and we've had a lot of fun with it. Look for a review here soon. $34.95. FINAL.

Hippo Jokes and Quotes—One of the more unusual (and controversial) software ideas we've seen—a computerized joke book. You may access your jokes by subject, author, or keyword and choose the degree of risque—from PG to X. You may also play the censor by deciding if you want to include ethnic or sexist jokes. Very different. $34.95. FINAL.

Hippo ST Disk Utilities—Nicknamed "DUST," this will allow complete examination of disk tracks and sectors plus examination of most of memory. You may also alter anything you examine—at your own risk. Completely GEM-operated and mouse-controlled, it includes file recovery, string search and many other valuable routines. $49.95. FINAL BETA.

HippoSpell—A spelling checker that's currently designed to work with Express, ST Atariwriter, and GEMwrite. Includes a dictionary of 30,000 root words which can be easily augmented and permits you to program it for commonly misspelled words. $39.95. BETA.

Hippo ST RAMdisk—This is particularly valuable if you've customized your ST to one-megabyte. The RAMdisk can be installed—in several sizes—as a boot-up on any system disk. $34.95. BETA.

On the hardware side, Hippo is working on a $139.95 **EPROM Burner**. BETA. They also mentioned an Analog to Digital **Sound Board** and told us they had reached the point of real-time reverberation. Just hook up a microphone, speak into it, and manipulate the output with your ST. We're particularly anxious to see this product. ALPHA.

HABA HERE

Haba Systems of Van Nuys, CA (not to be confused with above-mentioned Hippopotamus) dropped by **Antic** to preview their newest ST products too. We'll be seeing a final version of Haba Hippo C within the week and Haba promised an enhanced version later. Phone (800) HOT-HABA toll-free for more information.

Habadex Phone Book—Haba systems assured us that **Antic** was the first to see this. More than a computerized Rolodex that uses color GEM displays, the Habadex is almost a mini-database and will alphabetize and categorize phone numbers by company, city, state, etc. Can print out labels and mailing lists, and when hooked up to a modem, it will autodial a phone number with a click of the mouse. $59.95. BETA.

10-Megabyte Hard Disk—This may be the only time when the cliche "blinding speed" is appropriate. We saw a prototype hard disk flipping through 32K picture files at a speed of about 3/4 of a second—each. $799. BETA.

HabaWriter—The first word processor to use GEM was to ship in October. Works with Epson-compatible printers. A version with a variety of fonts and an integrated spell checker is in production. $74.95. FINAL.

Haba Solutions: Wills, Business Letters—Designed to be used with HabaWriter, (and compatible with other ST word processors) these packages contain only rudimentary text editors. Wills takes you step-by-step through the process of writing your own will. Business Letters is a collection of 50 business letters—just plug in names and other pertinent information for invitations, annual reports, memos, etc. $49.95 each. FINAL.

MORE U.S. ST-WARE

Universe II—You're an agent for a government composed of 47 distant planets in this sequel to OmniTrend's Universe, a 24th Century text/graphic adventure game. $69.95. PRESS.

DEGAS—The first "paint" program for the ST makes MacPaint look like fingerpaint. Written by Tom Hudson of Batteries Included. $39.95. BETA.

PC InterComm—Mark of the Unicorn's high-priced telecommunications program provides capture, Kermit and XMODEM modes, plus baud rates from 110 to 9600. To be reviewed in the next issue of **Antic**. $124. FINAL.

ST Writer—Atari Corp's. ST word processor has operating commands exactly like the old 8-bit Atariwriter and includes utilities to transmit 8-bit Atariwriter files to the ST. At press time, Atari was undecided about marketing plans for this product. ST Writer may be given away with the ST until GEMwrite is available. BETA.

NEOchrome—Atari Corp.'s powerful "JackPaint" program has been showing up for field testing at various users groups, along with some spectacular demo pictures. BETA.

Hacker and **Mindshadow**—Activision's first ST releases are expanded versions of recent 8-bit titles. Hacker is a simulation of online hacking. Mindshadow is a graphic adventure. PRESS.

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OUTLINE PROCESSOR — Organize your ideas; plan and write a term paper or article; plan a project; print out your final product. Edit and reorganize until it's right.

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LABELS — Format and print labels from Flexible Filer.

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INTEREST PROJECTIONS — Compare loans and savings plans.

ENTERTAINMENT JACKPOT

CHECKERS — A classic.

OTHELLO — Beat the computer.

CRIBBAGE — The popular card game.

BACKGAMMON — The ST is aggressive.

THE VISITOR — Text adventure with graphics. Your smart but odd companion must rendezvous with its mother ship.

BOMBSQUAD — Text adventure with graphics. Find the terrorists' bombs in time.

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THE WRITER — Watch your ST write poetry and prose. Personalize the vocabulary and subjects.

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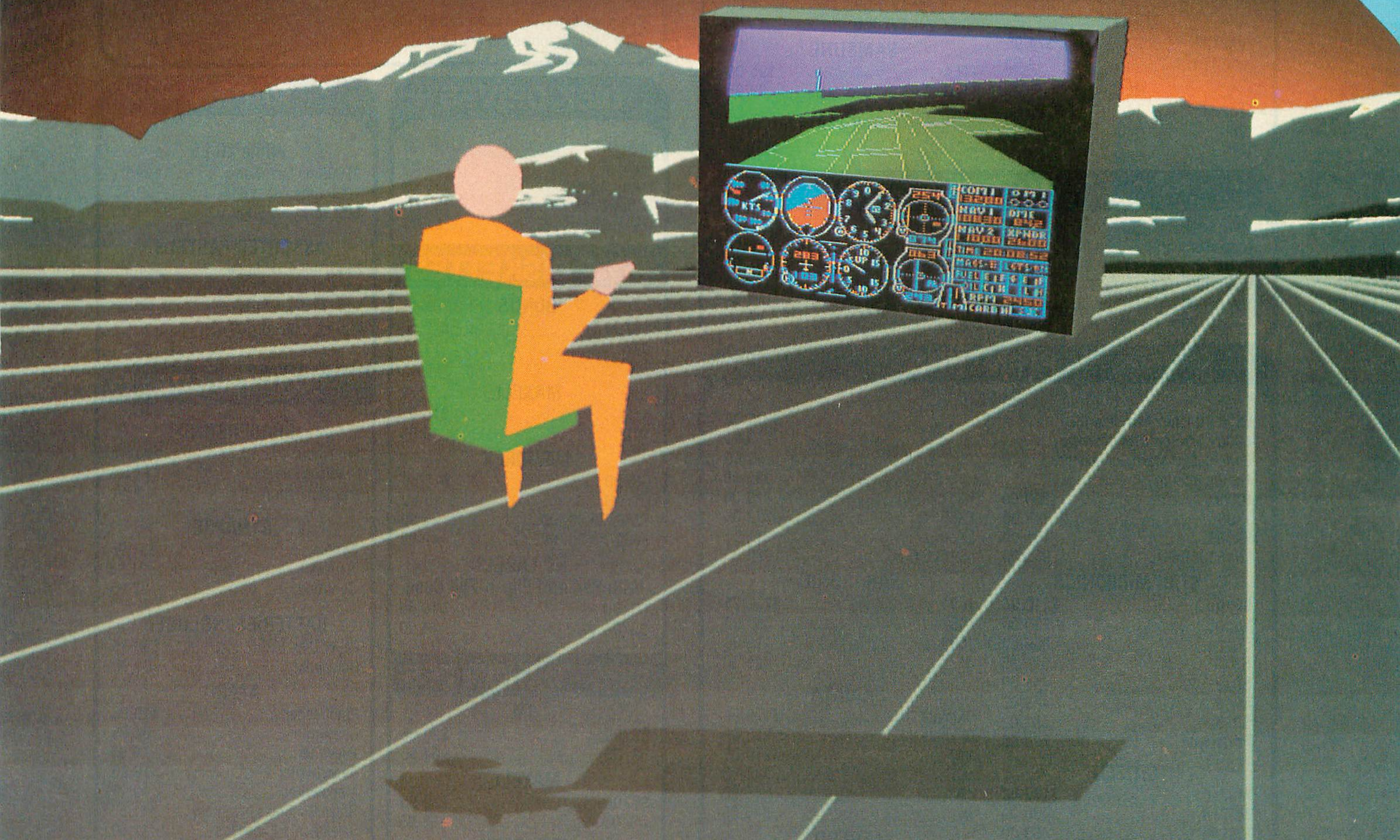
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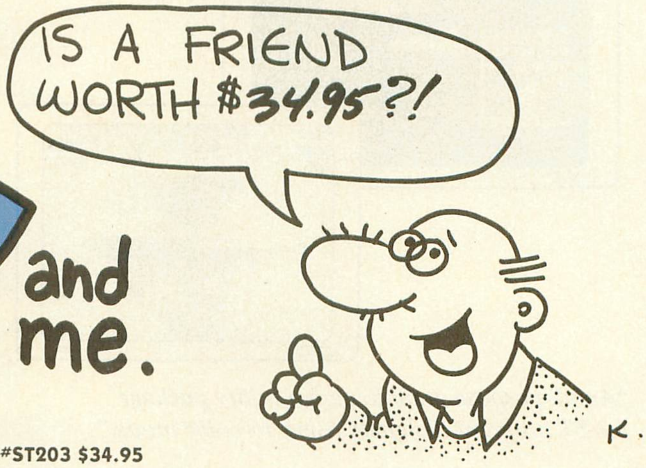
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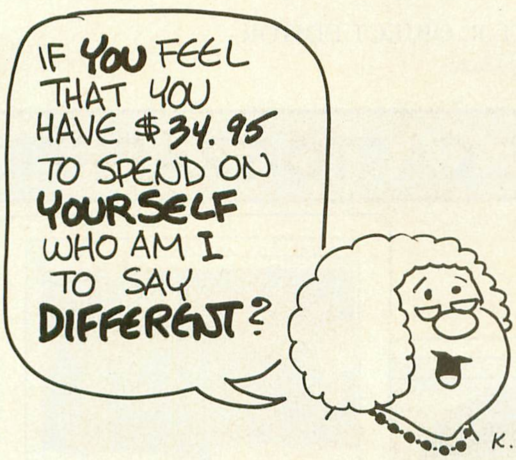
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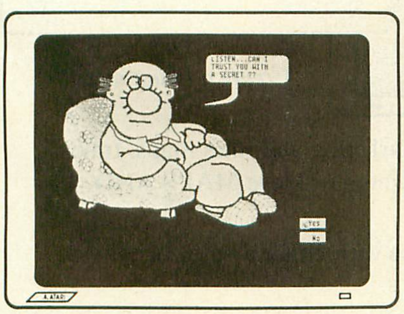
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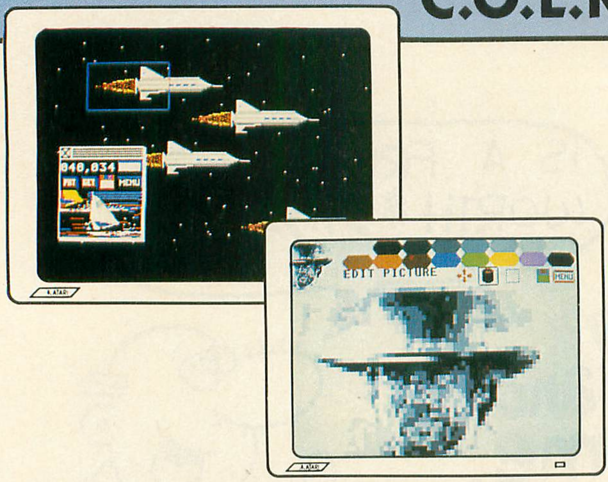
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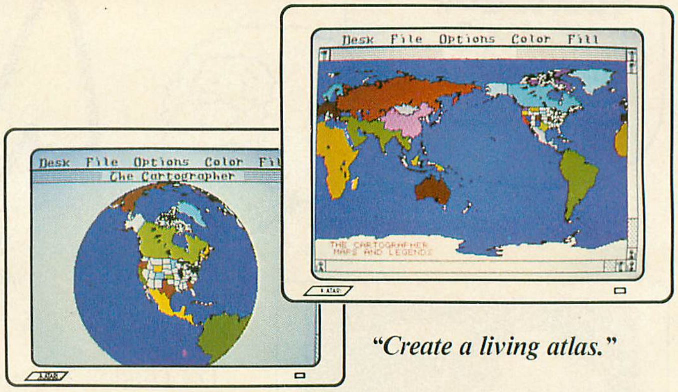
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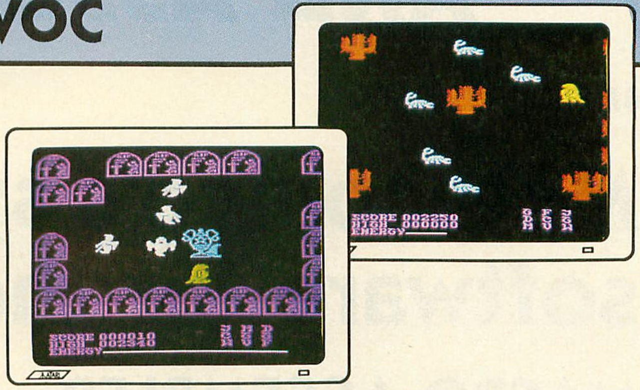
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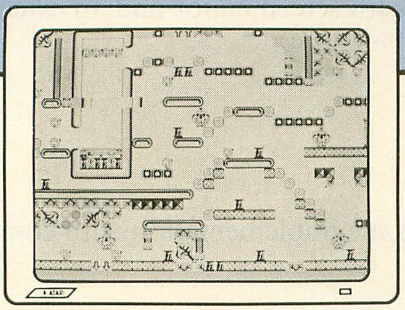
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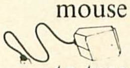
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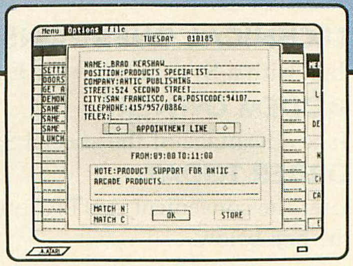


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TOS ROADMAP

Inside Tramiel Operating System

By PATRICK BASS & JACK POWELL of the **Antic** Staff

When starting to use a brand new computer, we find ourselves learning the vocabulary of a brand new language—and we don't mean a programming language. Articles about the 520ST are liberally sprinkled with unfamiliar terms like VDI and TOS, GEM and GEM Desktop. What's the difference between GEM and GEM Desktop? How is a Dialog Box different from an Alert Box?

It gets pretty confusing. So we thought we'd take time to examine the ST vocabulary. Just to make sure we're all speaking the same language.

BIOS TO DESKTOP

Starting at the very lowest level of instruction, we find a collection of zeros and ones that the machine understands. This is, quite logically, called machine language. We can translate these numbers into hexadecimal, decimal, or any base we like, but it's all still machine language.

Let's make these same numbered instructions a little easier for humans to remember by translating them into alphabetical mnemonics. We now have assembly language.

Using assembly language, we write a collection of routines which allow the user to communicate with the machine. These Basic routines allow information to flow In and Out between the computer and the user. They are, therefore, called the BIOS, or Basic Input/Output System. BIOS in the ST includes a section of routines that manage disk file manipulations. This section is known as BDOS, or Basic Disk Operating System.

At a slightly higher level, the ST needs a series of routines for its own internal use, such as enabling or disabling interrupts, or setting the screen location. Many of these calls are more or less simple extensions to BIOS, so they are known in the ST as XBIOS.

Above these levels we need a series of routines that will recognize commands from the user and translate these commands into a series of calls to both BIOS and XBIOS. This command level is known in the ST as GEMDOS.

GEMDOS is the ST name for a version of CP/M 68K—which is known industry-wide as a command-level DOS because, unlike menu-driven Atari DOS 2.5, GEMDOS requires simple commands typed in at a prompt. For example, type DIR at the prompt and the computer will show the disk directory.

At this point we have assembled essentially the same operating system that older computer systems have. The user needs to remember a series of commands which are then typed in at the proper time to get the computer to do the proper task. It would be nice to have the computer do most of that work for us.

ENTER GEM

The people at Digital Research, Inc. also thought that would be nice. So they wrote a series of routines that will sit on top of GEMDOS and act as a go-between, simplifying the process of getting the users' commands into the computer.

They decided that since a picture is usually worth 1,000 words, the system should be graphics-based, whenever practical. Since the object of this collection of routines is to Manage the use of a Graphics-based Environment, the name selected for the system is GEM, which is short for Graphic Environment Manager.

GEM is divided into three basic sections—VDI, AES and the GEM Desktop.

VDI

VDI, which stands for Virtual Display Interface, is the workhorse of the three routines. Here we find the code that actually draws the dots and lines and circles on the video screen. Whenever a box, polygon or word is drawn on the TV screen, VDI is at work.

VDI controls the display hardware, and can be used by other programs without either AES or the GEM Desktop in place. Atari has even provided developers a back-door into VDI, called the "Line A" interface. This

continued on next page

bypasses the processing that GEM puts on each graphics call and allows more or less direct access to the low-level graphics drawing routines from assembly language.

AES

The section that often gives VDI its commands is called AES, for Application Environment Service. AES contains a world of pre-defined routines for nearly everything a programmer needs to do while working with GEM. Need to open a window? AES has a call for that. Need to find out which icon the user clicked on? AES to the rescue! There are routines for everything from hiding the mouse cursor to dragging boxes around the Desktop. AES cannot operate without VDI in place, but it doesn't really care if the Desktop is there.

GEM DESKTOP

The GEM Desktop is really nothing more than a program that runs when the system is powered up. The Desktop allows the user to check disk directories, move, copy and delete files, format disks, rename files, and generally do anything that could be done from a command-level operating system. Except here we can simply point-and-click to perform a complicated series of commands.

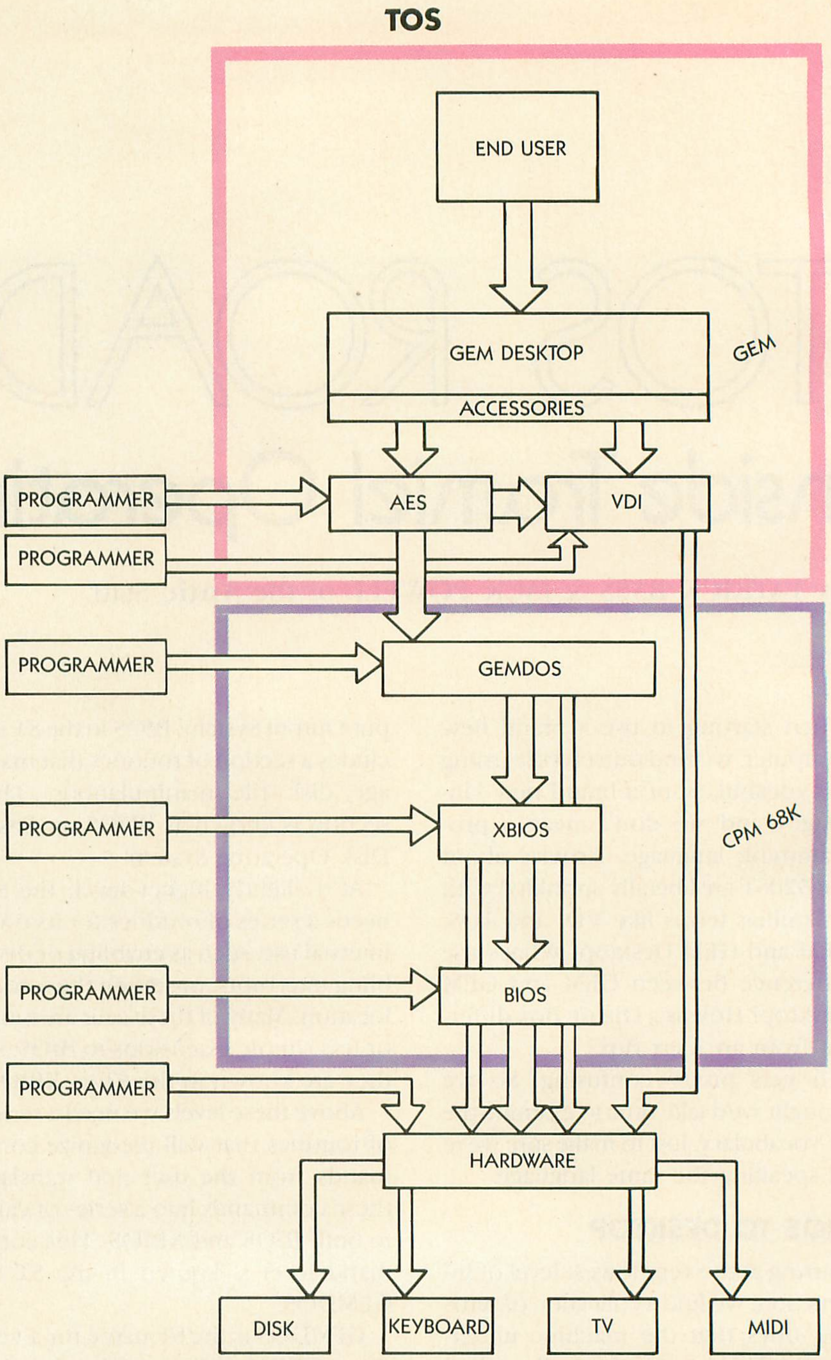
Hallmarks of any program running under GEM are Alert Boxes, Dialog Boxes, Drop-Down Menus, and Desk Accessories. All of these elements may also be found on the Desktop.

When a program written for a text-based computer gets confused and needs guidance from its user, it pops a question onto the screen, then waits for the user to type in some instruction and (usually) press [RETURN]. And all this may vary considerably from computer to computer and from program to program.

To standardize such operations, Digital Research designed two ways to present questions to and get answers from the user. The simpler of the two is called an Alert Box and the other is called a Dialog Box.

ALERT BOX

An Alert Box has three parts. One of three icons is presented at the left side



of the box—an exclamation point, a stop-sign, or an upraised hand meaning wait. Then you may have as many as five 40-character lines of information, followed by up to three buttons along the bottom.

GEM waits until the user has clicked inside one of the buttons, and then returns the number of that button to the user. The user can then act upon the exit information. For a Desktop example of an Alert Box, try to move one of the Disk Icons into the Trash Can. An Alert Box will appear telling you that you may not throw the disk icon into the Trash.

An Alert Box literally alerts you to a situation, then permits from one to three responses. In the above example, your only choice is to click the OK button.

DIALOG BOX

Sometimes more information is needed than can just be clicked on. Dialog Boxes—naturally—permit a dialog between the user and the computer.

For example, whenever a disk file is re-named, the new file name is typed into a Dialog Box.

Whenever a Dialog Box is created

by the programmer, GEM is told how big to make the box, where inside the box to draw pictures, put text and receive answers.

There are controls for putting shading, color, and different fonts into a Dialog Box, whereas the Alert Boxes are sized, drawn and operated automatically by GEM.

FOUR-WAY LOADS

Programs can be run from the Desktop in one of four ways. If they have been written to take advantage of GEM, they may be given the extender. PRG and, when double-clicked from the desktop, they will be installed as a GEM program and will contain many of the elements mentioned above.

A program may be installed as a TOS program by giving it the extender .TOS. When double-clicked, this program will typically boot up with a white screen and blinking rectangular cursor. In short—a typical CPM/68K program. The **Express Letter Processor** reviewed in this issue is such a program.

Some CP/M-style programs require parameters to be input before they can run. For example, to compile a C program, you might type: C B:MYFILE. By putting the extender .TTP on this type of program, you may run it directly from the desktop. It will be automatically installed as TOS Takes Parameters. When you double-click it, a Dialog Box will appear requesting your parameters.

The fourth way to run a program is as a Desk Accessory. Desk Accessory programs are GEM programs which have been specially linked. The object file is named DESK1.ACC. Only the number (up to three) may be changed in the file name. Now, when that program is placed on your system disk and booted, it will appear in the Desk Drop-Down Menu. The Control Panel is a Desk Accessory. *(For more details on how to design a Desk Accessory, see our ST Font Loader in this issue.*—ANTIC ED)

WHERE'S TOS?

So where did TOS go?

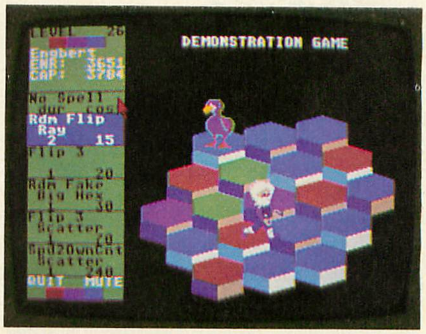
First we group together all of the routines that we have discussed so far—BIOS, XBIOS, GEMDOS, VDI, AES and GEM Desktop. Together this collection of routines can be known as TOS, which stands for Tramiel Operating System.

At this writing, GEMDOS with TOS in RAM takes up about 90K and the GEM Desktop about 110K. Compare this with the 10K to 24K operating systems found in smaller 8-bit machines.

We hope that this quick overview of the different parts of TOS will help you design software for the versatile 520ST computer. When the divisions of labor are clear, it becomes possible to insert your own instruction list at any level, bypassing what may be (for your needs) a slower or clumsier routine already in place. In short, experiment! You can't hurt the computer by giving it instructions.

ST PRODUCT NEWS

ST reviews



HEX
Mark of the Unicorn
222 Third Street
Cambridge, MA 02142
(617) 576-2760
$39.95

Reviewed by Suede Barstow

Mark of the Unicorn's **Hex** is a strategy game designed to take full advantage of the ST's 16-color graphics. The basic rules are simple, but the game is exceedingly complex.

You take the part of a unicorn (aptly enough) on a hexagonal grid consisting of 19 vari-colored hexagonal pillars. As the game begins, the grid is made up of a mixture of red, blue, purple and green hexes. Your job is to turn them all green. The hexes "flip" colors and rotate through a fixed pattern as you jump on them. For example, if there is an isolated cluster of four blue hexes, once they are all jumped on, they will all flip to the next color.

Simple, no? Well, it took me a while on the first level just figuring how to turn all those hexes green. And just as I was congratulating myself on an astounding achievement, the board reappeared with an opponent on the other side of the grid—a dodo bird!

As you work your way up the levels of Hex, you meet and compete against several fanciful characters. There are twelve possible opponents in Hex, each with different levels of intelligence. The dodo bird is, naturally, the least challenging opponent.

The game's designer, Steven Linhart, has created an enchanting crew of computer characters. There's a jellyfish named Manowa; Kirion, an old gnome with unruly white hair and

continued on next page

pipe; Rubicon the dragon; and Alister, a wizard with a lantern. Sir Jake is an invisible man consisting of nothing but hat, muffler, glowing cigarette, and tennies. When he jumps, his cigarette ashes float in a cloud about his head. Krakawann is a creature that changes after each jump—to earth, water, fire or air.

Though there are just 12 opponents, there are 120 rounds, and it's not simply a game of flipping colors. There are spells involved. And this is where Hex gets really complicated.

With each round you win, the computer offers a spell which you may take and store in a menu column at the left of the screen. There is room for five spells at any time. If you have enough energy points, you may choose any of those spells just before your turn. There are multiple jump spells, random color flip spells, a "trade places" spell, and some really boggling "confuse" spells wherein several random hexes appear to become colors that they're really not! All this wouldn't be too bad if it wasn't for the fact that your opponents also cast spells. Sir Jake has a bad habit of turning most of the hexes invisible.

I've found Hex to be a pretty addictive game. At first glance, it looks like a cross between Q-bert and Archon. But there is no arcade action here. This is strictly a board strategy game like Othello, with fascinating complexities thrown in.

High scores are automatically stored on disk and the game is entirely mouse operated. You may, at any time, restart your game or clear any of the previous scores. Unfortunately, you may not save your position for a later, continued bout. Also, there is no way for two human opponents to play which is too bad since Hex would make an excellent two-person game.

As it stands, Hex is a clean piece of programming and one of the best strategy-board games I've seen on a computer. It sets a high standard for future ST entertainments.

CHAT
SST Systems
P.O. Box 2315
Titusville, FL 32781
(305) 269-0063
$19.95

Reviewed by Charles Jackson

Chat is the first telecommunications software for Atari ST computers to reach the market. It's a reliable, easy-handling and spectacularly low-priced 300/1200 baud telecommunications package—with clear, concise and complete documentation.

The program supports XMODEM and Capture/Upload protocols, variable delay rates and autodialing. Operations are controlled with a mouse and the 10 function keys. If you own a modem and an ST, Chat is all the software you need to get around online.

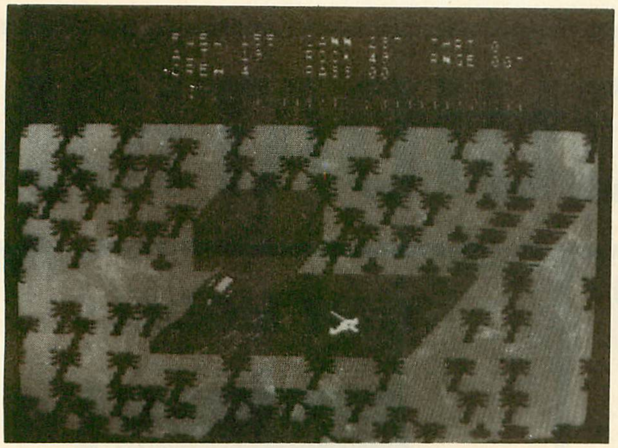
Chat's XMODEM protocol assures error-free file transfers and is compatible with CompuServe, Delphi, and many Atari bulletin boards. **Antic** has successfully transferred files of over 125K with Chat. However, Chat uses standard XMODEM protocol which is incompatible with many non-standard implementations found on AMODEM-based bulletin boards.

Chat also supports XON/XOFF protocol for transferring ASCII (7-bit) files between systems which lack XMODEM capabilities. This protocol is similar to Hometerm's Capture and Upload functions and does not incorporate any error-checking algorithms.

If you own a Hayes-compatible modem you can use Chat's Phone Directory function as an autodialer. The Chat phone directory can store your 24 most-used online numbers.

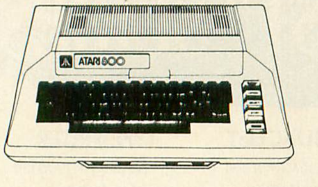
Although Chat is designed to work with Hayes-compatibles, you can customize it with the SETUP program included on the disk, to work with almost any RS-232 compatible modem.

continued on page 79



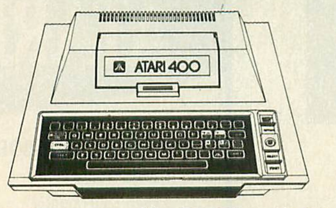
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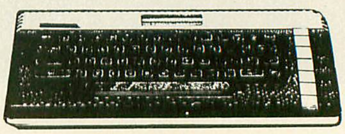
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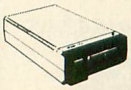
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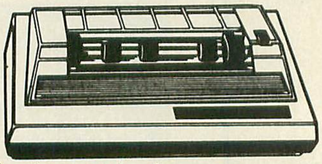
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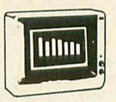
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ST REVIEWS
continued from page 76

Sorry, direct-connect modems such as the Atari 1030 and MPP-1000C will *not* work with Chat or with any other ST telecommunications package. On the other hand, with all of the ST's built-in ports, you'll never have to go looking for an interface such as the Atari 850.

Here's a sample Chat session to give you a taste of how the program works. From the GEM Desktop, we'll visit CompuServe's SIG*Atari, download a file with XMODEM, and return to the desktop.

From the GEM Desktop, double-click on the CHAT.PRG icon, and wait for the title screen to appear. If you want to change baud rates before logging on, press the [F7] key.

If you have a Hayes-compatible modem, press the [F8] key to get to the phone directory and double-click the phone number. If not, dial the number from the keyboard with standard ATD commands.

Once logged onto CompuServe, type GO SIGATARI from any "!" prompt. Now, enter one of the ST data libraries and find a file you'd like to download.

Chat normally stores downloaded files in a folder. This folder, labeled SUPPORT, contains the default filenames for file transfers. These filenames, XMODEM.SND, XMODEM.RCV and CAPTURED.TXT, can easily be changed with CHANGE FILENAMES function. Press [F6] to use this function.

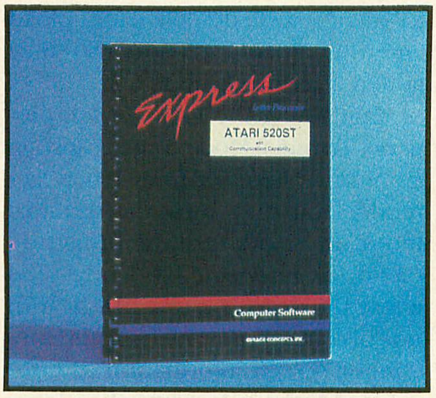
From CompuServe's (R D T): prompt, select D to tell CompuServe you want to download. Select XMODEM at CompuServe's protocol prompt, and press [F3] to begin the transfer.

During the download, Chat tells you the number of the 128-byte sector it's currently receiving. Although ST disk sectors contain 512 bytes, standard XMODEM protocol demands 128-byte sectors, and this is the form Chat uses.

Press [RETURN] to signal CompuServe's computers when you're finished—and you're ready to download more files.

Type OFF to log off from CompuServe, then press [F10] to leave Chat and return to the desktop. The [F10] key clears all capture buffers, closes any open files, and takes care of several other important housekeeping functions.

First-timers will have little trouble getting online with Chat, while veteran onliners will find it a simple and invaluable utility. SST Systems has performed a real service for ST owners, with this reasonably-priced terminal software.



EXPRESS
(Letter Processor)
Mirage Concepts
4055 W. Shaw, #8
Fresno, CA 93711
(800) 641-1441
In California, (800) 641-1442
$49.95

Reviewed by Jack Powell

Mirage Concepts began a little over three years ago as a software developer for the Commodore 64, at a time when there was very little software for the machine. They created what they felt was the best database product ever for the Commodore. But because they took an extra three to four months to get things just right, an inferior database beat them to the market and got all the glory—and the sales.

Mirage Concepts won't let this happen again.

Express is a small-documents processor that Mirage Concepts originally developed for the IBM PC and Macintosh. They transferred it to the Atari ST and had a complete package, with documentation, headed for the retailer's shelves within *three weeks* of receiving their development ST.

Express is subtitled the "Letter Processor." It is not a full word processor and was never designed as such. The program is intended to whip out two or three page letters, merge names and addresses, and print out the envelopes. Simplicity is the keyword here.

The people at Mirage Concepts perceived a "hole" in the word processing marketplace. People weren't using all those extra functions and felt stupid when they couldn't master a complex word processor. What they really wanted, Mirage was finding, was a stripped-down word processor with a simple mail-merge capability.

Express is an excellent letter processor but a mediocre word processor. Since it was never designed as a word processor this may seem an unfair comment, but Mirage Concepts is both blessed and cursed here.

On the one hand, they were first in the ST market with a practical application program. They have a captive audience. On the other hand, that captive audience is going to want a full-featured word processor and may judge Express accordingly.

The program itself runs quite smoothly. GEM is not used (three weeks, remember). Several choices are offered from the central menu. You may use the Word Processor, Print the Text in RAM, Enter Data in
continued on next page

the Mailing List, use the Typewriter Mode, or choose File Commands.

File Commands are the basic DOS options of rename file, delete file, etc. The Typewriter Mode lets you type directly to your printer. Each line is sent out when the carriage return is pressed. This mode is useful for quick letters and memos.

The Mailing List is a fixed data base including most fields needed for a practical mail merge. Again, simplicity is built in. None of the fields may be altered. They are: Name, Title/Institution, Address, City, State, Zip Code/Country, Phone, Salutation, and Alternate Phone.

In most cases the above fields will take care of your mail merge needs. And a field can contain any type of data you wish. Later, it's a very simple matter to merge the fields with your letter. Records can be searched by any field and merged letters can be printed out in alphabetical order or in zip code order.

Printing is relatively simple since—with the exception of bold, underline and printer pause—there are no embedded printer control codes in the text. Express is a "what-you-see-is-what-you-get" word processor. Your margins and tabs are set on-screen. There is no right-justification and no code for line spacing.

There is, however, a method to force printer control by sending the codes to the printer in Typewriter Mode. This is clumsy at best. Particularly if you need to change the codes more than once within the same document.

The Word Processor itself presents a clean, uncluttered work screen with only a margin/tab line at the top. A press of the [HELP] key presents a window of most commands. The commands are entered by pressing [CONTROL] plus a letter. Since there are so few commands, we can include them here for your information:

Erase all text, Load text from disk, Write text to disk, Reform paragraph, Set margin, Release margin, Set/remove tabs, Delete line, Remove paragraph, Insert paragraph, Bold, Underline, Printer pause, Return to main menu.

There is no Center command and no search and replace. You can delete, cut, or paste blocks on paragraph boundaries, but not within portions of the paragraphs.

The ST cursor arrow keys operate the cursor on single character moves, but the old Word Star diamond pattern of [CONTROL] keys must be memorized for extended cursor moves, which are: move to beginning of text, move to end of text, one screen up, one screen down.

While converting Express to the ST, the people at Mirage Concepts found time to monitor SIG*Atari on CompuServe. They discovered many new ST owners were desperate for upload and download capability. So they added a terminal mode.

Maintaining the focus of the program, Terminal Mode contains just six commands, accessed from Typewriter mode. You may turn the terminal mode on or off, turn the printer on or off for automatic hardcopy, send a text file, receive a text file, or turn on "disk transfer" which captures incoming screen information to disk.

Since Express is primarily a letter processor, there is no attempt to provide XMODEM or any other form of binary file capture protocol. Any parameters, such as baud rate and parity, are first set from the GEM Desktop using the Set RS-232 Configuration accessory.

As I mentioned before, I find Express to be an excellent letter processor. Once I got over my search for a full-fledged word processor and concentrated on the program as it was originally intended, I was quite pleased with the results.

The mail merge functions are the easiest I've ever used. To accomplish the same thing on MultiMate or Word Perfect on an IBM PC, you'd be at it all day. Surprising and convenient features occur when using Express. If your letter has an address within the first 30 lines, Express will ask you if you wish to print an envelope after printing your letter.

But many of the early ST programmers will never use this program to print letters. It turns out Express makes a fine text editor for typing in C and assembly source code. And it's a far cheaper package than any current competitor. However, the ST is a new machine and everything could change by the time you read this.

PRO ST HELPLINE

ST programmers—The new Professional GEM Helpline column by former Digital Research programmer Tim Oren is now on ANTIC ONLINE. Log onto CompuServe, type GO ANTIC, and select the ST Section or What's New Online. More details in this issue's ANTIC ONLINE story.

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TYPING SPECIAL ATARI CHARACTERS 84

HOW TO USE TYPO II 85   ERROR FILE 85

DISK SUBSCRIBERS: You can use all these programs immediately. Just follow the instructions in the accompanying magazine articles.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below. (Squares are drawn around the normal video characters so you can see their positions more accurately, these squares will not appear in listings.)

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL T
	CTRL A		CTRL U
	CTRL B		CTRL V
	CTRL C		CTRL W
	CTRL D		CTRL X
	CTRL E		CTRL Y
	CTRL F		CTRL Z
	CTRL G		ESC ESC
	CTRL H		ESC CTRL –
	CTRL I		ESC CTRL =
	CTRL J		ESC CTRL +
	CTRL K		ESC CTRL *
	CTRL L		CTRL .
	CTRL M		CTRL ;
	CTRL N	|	SHIFT =
	CTRL O		ESC SHIFT CLEAR
	CTRL P		
	CTRL Q		
	CTRL R		ESC DELETE
	CTRL S		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人CTRL ,		人CTRL Y
	人CTRL A		人CTRL Z
	人CTRL B		ESC SHIFT DELETE
	人CTRL C		
	人CTRL D		
	人CTRL E		ESC SHIFT INSERT
	人CTRL F		
	人CTRL G		
	人CTRL H		ESC CTRL TAB
	人CTRL I		
	人CTRL J		
	人CTRL K		ESC SHIFT TAB
	人CTRL L		
	人CTRL M		
	人CTRL N		人CTRL .
	人CTRL O		人CTRL ;
	人CTRL P		人SHIFT =
	人CTRL Q		ESC CTRL 2
	人CTRL R		ESC CTRL DELETE
	人CTRL S		
	人CTRL T		
	人CTRL U		ESC CTRL INSERT
	人CTRL V		
	人CTRL W		
	人CTRL X		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.) Note: In the printed listings, inverse characters will be slightly smaller than the normal ones.

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be *thicker* than the alpha-numerics. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F		/
	CTRL G		SHIFT +
	CTRL N		SHIFT -
	CTRL R		-
	CTRL S		+

HOW TO USE TYPO II

TYPO II is the improved automatic proofreading program for **Antic's** type-in BASIC listings. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at left of the line number. Press [RETURN].

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Owners of the BASIC XL cartridge from O.S.S. type SET 5,0 and SET 12,0 before using TYPO II.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
```

Don't type the TYPO II Codes!

```
ET 32120 ? "K":POSITION 11,1:? " TYPO II
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

ERROR FILE

ATARI 'TOONS

August 1985

The 22nd character in line 1090 of listing 2 is an A. Also, to load non-standard character sets, change NUMBER=1024 in line 1140 to: NUMBER=2050, and change line 1150 to: 1150 GOTO 1170.

GUESS THAT SONG

July 1985

The September, 1985 HELP! section contains an easier-reading listing of some of the tougher data lines in Guess That Song.

STAR VENTURE

July 1985

Change line 380 to:

```
380 IF PEEK(53279
)=6 THEN SOUND 0,
0,0,0:GOTO 80
```

MUSICIAN

June 1985

Change line 790 to:

```
790 IF A=54 THEN
POSITION 4,22:? "
6;"song cleared":
GOTO 810
```

And if you're having tempo problems, remove line 1720 and add the following:

```
1715 IF A=14 THEN
 TEMPO=-0.25:GOTO
 1700
1720 REM REMOVE T
HIS LINE
```

MANEUVER

April 1985

If you get hearts on the title screen, LIST the program to disk or cassette, type NEW, then ENTER and SAVE it.

FONT MAKER FOR SG-10

March 1985

The July 1985 issue of ANTIC contains a listing which, when merged with FONT MAKER, makes that program work on the Star SG-10. See the HELP section of that issue for instructions.

CUSTOM PRINT

March 1985

Custom Print has problems printing certain characters using redefined characters. Change line 5 to:

```
5 CS=PEEK(106)-8:
POKE 106,CS-1:GRA
PHICS 0:DIM CST$(
20):CST$=""
```

organize your personal schedule

APPOINTMENT CALENDAR

Article on page 23

LISTING 1

Don't type the TYPO II Codes!

```
VB 1 REM APPOINTMENT CALENDAR
UQ 2 REM BY ALFRED FILSKOV
OL 3 REM (c) 1985, ANTIC PUBLISHING INC.
SW 10 DATA     APPOINTMENT CALENDAR    
CJ 20 DATA     BY ALFRED H. FILSKOV    
NF 30 GOTO 1490
IV 40 REM DISPLAY CALENDAR
IX 50 TRAP 2180:SETCOLOR F2,F12,F2:SETCOL
   OR F1,F0,F8:? CL$:POKE CSR,F1:SV=F0
KA 60 LN=F16:GOSUB 2130:POKE LM,23:POSITI
   ON 23,F0:? A$:? B$:? C$:FOR A=F1 TO F6
   :? B$:NEXT A:? D$
HN 70 LN=F11:GOSUB 2130:POKE LM,28:POSITI
   ON 28,F11:? A$:? B$:? C$:FOR A=F1 TO F
   6:? B$:NEXT A:? D$
SP 80 LN=F20:GOSUB 2130:POKE LM,F8:POSITI
   ON F8,F15:? A$:FOR A=F1 TO F7:? B$:NEX
   T A:? D$;
YR 90 LN=F6:GOSUB 2130:POKE LM,F1:POSITIO
   N F1,F17:? A$:? B$:? C$:? B$:? B$:? D$
JH 100 LN=F22:GOSUB 2130:POSITION F1,F0:?
    A$:? B$
JB 110 FOR A=F4 TO F19 STEP F3:C$(A,A)=CH
   R$(23):NEXT A:? C$
PD 120 B$(F4)=B$:B$(F22)=U$:FOR A=F3 TO F
   13 STEP F2:POSITION F1,A:? B$:NEXT A
VQ 130 FOR A=F4 TO F19 STEP F3:C$(A,A)=CH
   R$(F19):NEXT A:FOR A=F4 TO F12 STEP F2
   :POSITION F1,A:? C$:NEXT A
OH 140 FOR A=F10 TO F19 STEP F3:D$(A,A)=C
   HR$(24):NEXT A:POSITION F1,F14:? D$
XU 150 D$(F4,F4)=CHR$(24):D$(F7)=CHR$(F3)
   :POSITION F1,F14:? C$(F1,F7):? B$(F1,F
   7):? D$
WU 160 A$=M$:A$(LEN(A$)+F1)="  ":A$(LEN(A
   $)+F1)=Y$:POSITION INT(F12-LEN(A$)/F2)
   ,F1:? A$
UU 170 RESTORE 180:FOR A=F2 TO F20 STEP F
   3:READ A$:POSITION A,F3:? A$(F1,F2):NE
   XT A
TY 180 DATA MONDAY,TUESDAY,WEDNESDAY,THUR
   SDAY,FRIDAY,SATURDAY,SUNDAY
YU 190 FOR A=F1 TO F9:READ B,C,A$:POSITIO
   N B,C:? A$:NEXT A
JV 200 DATA 29,1,MENU,24,3,1. View date,2
   4,4,2. Edit date,24,5,3. Print date,24
   ,6,4. Print month
WN 210 DATA 24,7,5. Main menu,30,12,MESSA
   GE,2,18,DATE,11,15,>APPOINTMENTS<
TE 220 REM DISPLAY DATES
UN 230 DATE=F0:RESTORE 240:FOR A=F1 TO M:
   READ DAYS:NEXT A:IF DAYS=28 AND Y/F4=I
   NT(Y/F4) THEN DAYS=29
ZB 240 DATA 31,28,31,30,31,30,31,31,30,31
   ,30,31
TU 250 A=(Y-1985)*F12+M:FIR=VAL(FD$(A,A))
   :C=FIR*F3-F1:D=F5:E=F1
DF 260 FOR A=F1 TO DAYS
RD 270 IF E<F10 THEN A$=" ":A$(F2)=STR$(E
   ):GOTO 290
WJ 280 A$=STR$(E)
CG 290 IF J$(E*F126-F125,E*F126)<>BK$ THE
   N FOR B=F1 TO F2:A$(B,B)=CHR$(ASC(A$(B
   ,B))+128):NEXT B
EL 300 POSITION C,D:? A$
UU 310 C=C+F3:IF C>F20 THEN C=F2:D=D+F2
HP 320 E=E+F1:NEXT A
SN 330 REM GET MENU OPTION
PT 340 MSG=F1:GOSUB 1280
LL 350 GET #F1,A:D=A-48:IF D<F1 OR D>F5+S
   V THEN 350
WL 360 ON D GOTO 380,380,710,860,1120,119
   0
NA 370 REM VIEW DAY
GY 380 MSG=F1+D:GOSUB 1280:POSITION 36,F1
   7:POKE CSR,F0:? CSR$;
DD 390 GET #F1,A:IF (A>57 OR A<48) AND A<
   >32 THEN 340
AM 400 ? CHR$(A);:GET #F1,B:? CHR$(B)
MB 410 IF (B>57 OR B<48) AND B<>32 AND B<
   >155 THEN 340
LS 420 A=A-48:B=B-47:IF A<F0 OR A>F9 THEN
    A=F0
VT 430 IF B<F0 OR B>F10 THEN B=F0
JT 440 IF B THEN DATE=A*F10+B-F1:GOTO 460
EP 450 DATE=A
UU 460 IF DATE<F1 OR DATE>DAYS THEN 340
LW 470 IF D=F2 THEN MSG=F4:GOSUB 1280
AB 480 DAY=FIR+DATE-F1
OT 490 IF DAY>F7 THEN DAY=DAY-F7:GOTO 490
EV 500 RESTORE 180:FOR B=F1 TO DAY:READ A
   $:NEXT B:POSITION F3,20:? A$(F1,F2)
LN 510 POSITION F4-LEN(STR$(DATE)),F21:?
   " ";DATE
SF 520 FOR A=F0 TO F6:B=DATE*F126-F125+A*
   F18:POSITION F9,F16+A:? J$(B,B+F17):NE
   XT A:IF D=F1 THEN 340
FN 530 REM EDIT APPOINTMENTS
CQ 540 A=F9:B=F16
VC 550 POKE CSR,F0:POSITION A,B:? CSR$;
KH 560 GET #F1,C
RH 570 IF C=27 THEN 680
WE 580 IF C=28 AND B>F16 THEN B=B-F1:GOTO
    550
QL 590 IF C=29 AND B<F22 THEN B=B+F1:GOTO
    550
NE 600 IF (C=30 OR C=126) AND A>F9 THEN A
   =A-F1:GOTO 550
MY 610 IF C=31 AND A<26 THEN A=A+F1:GOTO
   550
JH 620 IF C=155 AND B<F22 THEN B=B+F1:A=F
   9:GOTO 550
EJ 630 IF C<32 OR (C>124 AND C<160) OR C>
   252 THEN 560
LP 640 SV=F1:D=DATE*F126-F125+(B-F16)*F18
   +A-F9
EQ 650 J$(D,D)=CHR$(C):? CHR$(C);
AI 660 IF A=26 THEN ? CHR$(30);:GOTO 550
OX 670 A=A+F1:GOTO 550
CO 680 IF SV THEN POSITION 24,F8:? "6. Sa
   ve Month"
RY 690 MSG=F5:GOSUB 1280:GOTO 250
DV 700 REM PRINT DATE
TR 710 IF  NOT DATE THEN 350
GZ 720 TRAP 840:MSG=F6:GOSUB 1280
HE 730 A$="-":A$(F22)=" ":A$(F2)=A$:A$(F1
   ,F1)="+":A$(F22)="+"
```

```
QV 740 RESTORE 180:FOR A=F1 TO DAY:READ B
   $:NEXT A:C$=U$:C$(F2)=BK$
SC 750 C$(F12-INT(LEN(B$)/F2+0.5))=B$:C$(
   LEN(C$)+F1)=BK$:C$(F22)=U$
YN 760 B$=M$:B$(LEN(B$)+F1)=" ":B$(LEN(B$
   )+F1)=STR$(DATE)
GY 770 B$(LEN(B$)+F1)=", ":B$(LEN(B$)+F1)
   =STR$(Y):D$=BK$:D$(F12-INT(LEN(B$)/F2+
   0.5))=B$:D$(F1,F1)=U$
AT 780 D$(LEN(D$)+F1)=BK$:D$(F22)=U$
IC 790 LPRINT A$:LPRINT "|  APPOINTMENTS
   FOR  |":LPRINT C$:LPRINT D$:LPRINT A$
SI 800 FOR A=F0 TO F6:B=DATE*F126-F125+A*
   F18:LPRINT "| ";J$(B,B+17);" |":NEXT A

YN 810 B$=U$:B$(F2)=BK$:B$(F22)=U$:C$="_"
   :C$(F20)=" ":C$(F2)=C$:C$(F1,F2)="| ":
   C$(F21)=" |"
WH 820 FOR A=F1 TO F4:LPRINT B$:LPRINT C$
   :NEXT A:LPRINT A$
PL 830 LPRINT :LPRINT :LPRINT :GOTO 340
RD 840 MSG=F8:GOSUB 1280:FOR A=F1 TO 400:
   NEXT A:GOTO 340
ZD 850 REM PRINT MONTH
YN 860 MSG=F7:GOSUB 1280:TRAP 1090
ZS 870 OPEN #F2,F4,F0,"P":? #F2:? #F2:? #
   F2;CHR$(27);"A";CHR$(F10):E=F0
BQ 880 D$=BK$:D$(F4,F7)=Y$:D$(33)=Y$
JJ 890 B=LEN(M$):A=F21-INT(B/F2+0.5):D$(A
   ,A+B-F1)=M$
TM 900 ? #F2;CHR$(F14);D$:? #F2
CC 910 GOSUB 1080:FOR A=F12 TO 67 STEP F1
   1:D$(A,A)="+":NEXT A:D$(78)="+":? #F2;
   D$
OU 920 D$=BK$:FOR A=F1 TO 67 STEP F11:D$(
   A,A)=U$:NEXT A:D$(78)=U$
SC 930 RESTORE 180:FOR A=F1 TO F7:READ A$
   :C=LEN(A$):B=A*11-INT(C/F2+0.5)-F4:D$(
   B,B+C-F1)=A$:NEXT A:? #F2;D$
SV 940 GOSUB 1080:FOR A=F7 TO 73 STEP F11
   :D$(A,A)="+":D$(A+F5,A+F5)="+":NEXT A:
   D$(78)="+":? #F2;D$
AS 950 D$=U$:FOR A=F2 TO 104 STEP F17:D$(
   A)="      ":D$(A+F5)=CHR$(27):D$(A+F6)=
   "-1|     |":D$(A+F14)=CHR$(27)
IM 960 D$(A+F15)="-0":NEXT A
JH 970 FOR A=F1 TO F7:IF (E=F0 AND A<>FIR
   ) OR E>=DAYS THEN D(A)=F0:GOTO 1000
UV 980 E=E+F1:D(A)=E:C=A*F17-F5:A$=STR$(E
   ):IF E<F10 THEN A$=" ":A$(F2)=STR$(E)
UQ 990 D$(C,C+F1)=A$
CA 1000 NEXT A:? #F2;D$;CHR$(F15);CHR$(27
   );"Q";CHR$(137)
SO 1010 FOR A=F1 TO F7:D$=BK$:D$(100)=BK$
   :FOR C=F1 TO 134 STEP F19:D$(C,C)=U$:N
   EXT C
LE 1020 FOR C=F1 TO F7:IF  NOT D(C) THEN
   1040
NF 1030 D$(C*F19-F17,C*F19)=J$(D(C)*F126-
   F125+A*F18-F18)
ZP 1040 NEXT C:? #F2;D$:NEXT A
BI 1050 ? #F2;CHR$(F18);CHR$(27);"QP";:IF
    D(F7) AND D(F7)<DAYS THEN 940
JE 1060 GOSUB 1080:FOR A=F12 TO 67 STEP F
   11:D$(A,A)="+":NEXT A:D$(78)="+"
WD 1070 ? #F2;D$;CHR$(27);"A";CHR$(F12);C
   HR$(F12):CLOSE #F2:GOTO 340
KC 1080 D$="-":D$(80)=" ":D$(F2)=D$:D$(F1
   ,F1)="+":RETURN
DO 1090 CLOSE #F2:MSG=F8:GOSUB 1280
XZ 1100 FOR A=F1 TO 300:NEXT A:GOTO 340
CP 1110 REM EXIT
NX 1120 IF  NOT SV THEN 1680
LJ 1130 MSG=F12:GOSUB 1280
SW 1140 GET #F1,A:A$=CHR$(A)
SN 1150 IF A$="Y" OR A$="y" THEN 1680
IK 1160 IF A$="N" OR A$="n" THEN 340
PX 1170 GOTO 1140
JP 1180 REM SAVE MONTH
UL 1190 TRAP 1240:MSG=F9:GOSUB 1280
QV 1200 B$="D:":B$(F3)=M$:B$(F6)=Y$:B$(F1
   0)=".AC"
FV 1210 OPEN #F2,F8,F0,B$
RM 1220 FOR A=F1 TO 31:B=A*F126-F125:? #F
   2;J$(B,B+F125):NEXT A:CLOSE #F2
XJ 1230 POSITION 24,F8:? BK$(F1,F13):SV=F
   0:GOTO 340
WZ 1240 CLOSE #F2:IF PEEK(195)=162 THEN M
   SG=F11:GOTO 1260
WH 1250 MSG=F10
OQ 1260 GOSUB 1280:FOR A=F1 TO 400:NEXT A
   :GOTO 340
QY 1270 REM MESSAGE
II 1280 FOR A=F14 TO F19:POSITION 29,A:?
   BK$(F1,F9):NEXT A
UZ 1290 A=F1:B=F14:RESTORE 1360:POKE CSR,
   F1
BE 1300 IF A<>MSG THEN 1340
OI 1310 READ A$:IF A$="X" THEN RETURN
PM 1320 POSITION 29,B:? A$
QF 1330 B=B+F1:GOTO 1310
CC 1340 READ A$:IF A$<>"X" THEN 1340
PD 1350 A=A+F1:GOTO 1300
OC 1360 DATA Choose a,menu,option.,X
XP 1370 DATA What date,do you,want to,vie
   w? >__,X
UK 1380 DATA What date,do you,want to,edi
   t? >__,X
BT 1390 DATA Edit the,appoint-,ments for,
   the date,and press,ESC.,X
ZD 1400 DATA Finished,editing.,X
VC 1410 DATA Printing,current,date...,X
UX 1420 DATA Printing,month...,X
VS 1430 DATA Error in,printing!,X
LZ 1440 DATA Saving,month...,X
HL 1450 DATA Disk not,ready,error!,X
VO 1460 DATA Disk full,error!,X
US 1470 DATA Exit,without,saving,month?,(
   Y/N) >_,X
VW 1480 REM START
LO 1490 RESTORE 1510
YM 1500 READ F0,F1,F2,F3,F4,F5,F6,F7,F8,F
   9,F10,F11,F12,F13,F14,F15,F16,F17,F18,
   F19,F20,F21,F22,LM,F125,F126,CSR
VS 1510 DATA 0,1,2,3,4,5,6,7,8,9,10,11,12
   ,13,14,15,16,17,18,19,20,21,22,82,125,
   126,752
IJ 1520 GRAPHICS F0:POKE 83,39:SETCOLOR F
   2,F5,F2:POKE CSR,F1:?
MI 1530 DIM J$(3906),BK$(F126),FD$(180),M
   $(F9),Y$(F4),CSR$(F2),CL$(F1),U$(F1),D
   (F7)
LV 1540 DIM A$(38),B$(38),C$(38),D$(134),
   E$(F11)
KZ 1550 BK$=" ":BK$(F126)=" ":BK$(F2)=BK$
   :CSR$=CHR$(30):CSR$(F2)=CHR$(31):CL$=C
   HR$(125):U$="|"
OX 1560 OPEN #F1,F4,F0,"K"
AA 1570 REM READ FIRST DAY OF EACH MONTH
PV 1580 RESTORE 1590:FD$="":FOR Y=85 TO 9
   9:READ A$:FD$(LEN(FD$)+F1)=A$:NEXT Y
MV 1590 DATA 255136147257,366247251361
LR 1600 DATA 477351362472,512573514624
TP 1610 DATA 733614625735,144725736146
QA 1620 DATA 255136147257,367351362472
JD 1630 DATA 511462473513,622573514624
QI 1640 DATA 733614625735,145136147257
OV 1650 DATA 366247251361,477351362472
RZ 1660 DATA 511462473513
ZZ 1670 REM MAIN MENU
XF 1680 TRAP 2180:POKE LM,F6:POKE CSR,F1:
   ? CL$:SETCOLOR F2,F5,F2:SETCOLOR F1,F0
   ,F8
HS 1690 RESTORE 10:READ A$:? A$:READ A$:?
    A$
JW 1700 LN=26:GOSUB 2130:POKE LM,F7
YB 1710 POSITION F7,F4:? A$:? B$:? C$:FOR
    A=F1 TO F9:? B$:NEXT A:? C$:? B$:? D$
   :RESTORE 1730
```

continued on next page

```
FG 1720 FOR A=F1 TO F4:READ A$:POSITION F
   10,A*F2+F6:? A;". ";A$:NEXT A
OL 1730 DATA Load/Create a month,Delete a
    month,Disk directory,End program
PL 1740 POSITION F15,F5:? "MAIN MENU":POS
   ITION F10,F17:? "Choose an option =>";
   :POKE CSR,F0:? CSR$;
JE 1750 GET #F1,A:A=A-48:IF A<F1 OR A>F4
   THEN 1750
BN 1760 ? A:ON A GOTO 1780,1850,2040,2110

CX 1770 REM LOAD/CREATE A MONTH
IZ 1780 E$="load/create":GOSUB 1880
QR 1790 TRAP 1810:OPEN #F2,F4,F0,B$:? "Lo
   ading month...";
MS 1800 FOR A=F1 TO 31:INPUT #F2,D$:J$(A*
   F126-F125)=D$:NEXT A:CLOSE #F2:GOTO 50

SD 1810 IF PEEK(195)<>170 THEN 2190
TA 1820 CLOSE #F2:? "Creating new month..
   .";:FOR A=F1 TO 150:NEXT A
FW 1830 J$=" ":J$(3906)=" ":J$(F2)=J$:GOT
   O 50
OM 1840 REM DELETE MONTH
JP 1850 E$="delete":GOSUB 1880
YO 1860 TRAP 2190:? "Erasing...";:XIO 33,
   #F2,F0,F0,B$:GOTO 1680
XV 1870 REM LOAD/CREATE, DELETE ROUTINE
JI 1880 POKE LM,F1:LN=38:GOSUB 2130:? CL$
   :? :? A$
BK 1890 ? "| 1-JANUARY   5-MAY      9-SEP
   TEMBER |"
TH 1900 ? "| 2-FEBRUARY  6-JUNE    10-OCT
   OBER   |"
IP 1910 ? "| 3-MARCH     7-JULY    11-NOV
   EMBER  |"
KP 1920 ? "| 4-APRIL     8-AUGUST  12-DEC
   EMBER  |"
TI 1930 ? D$:POKE LM,F2:TRAP 2020
FP 1940 ? :? :? "What # month to ";E$;:IN
   PUT M:IF M<F1 OR M>F12 OR M<>INT(M) TH
   EN 2020
KP 1950 RESTORE 2010:FOR A=F1 TO M:READ M
   $:NEXT A:POSITION F2,F14:? "MONTH: ";M
   $
TB 1960 POSITION F2,F12:? "What year (85-
   99)";BK$(F4,LEN(E$));"19";
TZ 1970 INPUT Y:Y=Y+1900:IF Y<1985 OR Y>1
   999 OR Y<>INT(Y) THEN 2020
QS 1980 Y$=STR$(Y):POSITION F9+LEN(M$),F1
   4:? ", ";Y
SK 1990 B$="D:":B$(F3)=M$:B$(F6)=Y$:B$(F1
   0)=".AC"
CL 2000 ? :? :RETURN
MX 2010 DATA JANUARY,FEBRUARY,MARCH,APRIL
   ,MAY,JUNE,JULY,AUGUST,SEPTEMBER,OCTOBE
   R,NOVEMBER,DECEMBER
PM 2020 POP :GOTO 1680
HC 2030 REM DIRECTORY
WB 2040 POKE LM,F7:? CL$:? "This is the d
   isk directory:":POKE LM,F10:? :TRAP 21
   90
FS 2050 CLOSE #F2:OPEN #F2,F6,F0,"D:*.*":
   A=F2
DX 2060 INPUT #F2,A$:? A$
UI 2070 IF A$(F5,F16)="FREE SECTORS" THEN
    ? :? "   Press a key>";:GET #F1,B:CLO
   SE #F2:GOTO 1680
AO 2080 A=A+F1:IF A/F21=INT(A/F21) THEN ?
    :? "   Press a key>";:GET #F1,B:? :?
   :A=F0
RB 2090 GOTO 2060
FZ 2100 REM END
WZ 2110 POKE LM,F2:GRAPHICS F0:END
FC 2120 REM CONSTRUCT STRINGS
BS 2130 A$=CHR$(F18):A$(LN)=" ":A$(F2)=A$
   :A$(F1,F1)=CHR$(F17):A$(LN)=CHR$(F5)
WV 2140 B$=" ":B$(LN)=" ":B$(F2)=B$:B$(F1
   ,F1)=U$:B$(LN)=U$
OY 2150 C$=A$:C$(F1,F1)=CHR$(F1):C$(LN)=C
   HR$(F4)
CS 2160 D$=A$:D$(F1,F1)=CHR$(26):D$(LN)=C
   HR$(F3):RETURN
QM 2170 REM ERRORS
BZ 2180 POKE LM,F2:? :? "ERROR #";PEEK(19
   5);" AT LINE ";PEEK(186)+PEEK(187)*256
   :STOP
ZC 2190 CLOSE #F2:? :? :? "DISK ERROR--OP
   ERATION ABORTED!";:FOR A=F1 TO 400:NEX
   T A:GOTO 1680
```

spirals and horizontal sweep effects

DANDY DISSOLVER

Article on page 18

LISTING 1

Don't type the TYPO II Codes!

```
NU 2 REM SCREEN DISSOLVER DEMO
DH 3 REM BY FRED PINHO
OM 4 REM (c) 1985, ANTIC PUBLISHING INC.
ON 10 A=PEEK(740):POKE 106,A-8:GOSUB 820:
   ? "DRAWING FIRST SCREEN":GOSUB 260:GOS
   UB 620
TI 20 POKE 106,A-4:GRAPHICS 1:POKE 559,B:
   DLS=PEEK(560)+256*PEEK(561):HDN2=PEEK(
   DLS+4)+256*PEEK(DLS+5)
LK 30 ? "LOADING DISSOLVE ROUTINES":GOSUB
    280:GOSUB 460:GOSUB 500:? CHR$(125)
HJ 40 REM DRAW SECOND HIDDEN SCREEN
ZS 50 ? "DRAWING SECOND SCREEN":GOSUB 260
   :POKE 559,0:RESTORE 770:FOR T=1 TO 4:R
   EAD X,Y,Z:COLOR X:PLOT Y,Z:NEXT T
VV 60 FOR T=1 TO 4:READ V,W,X,Y,Z:COLOR V
   :PLOT W,X:DRAWTO Y,Z:NEXT T
OE 70 COLOR 10:FOR T=1 TO 15:READ W,X,Y,Z
   :PLOT W,X:DRAWTO Y,Z:NEXT T:PLOT 8,2:P
   LOT 17,11:PLOT 16,12
XB 80 FOR T=1 TO 6:READ V,W,X,Y,Z:COLOR V
   :PLOT W,X:DRAWTO Y,Z:NEXT T
IJ 90 REM MAIN SCREEN
UI 100 POKE 106,A:GRAPHICS 1:POKE 756,STA
   RT/256:POKE 559,B:DL=PEEK(560)+256*PEE
   K(561):SCR=PEEK(DL+4)+256*PEEK(DL++5)
HL 110 COLOR 58:FOR X=0 TO 19:PLOT X,0:PL
   OT X,19:NEXT X:FOR Y=1 TO 18:PLOT 0,Y:
   PLOT 19,Y:NEXT Y
TE 120 COLOR 26:FOR X=1 TO 18:PLOT X,1:PL
   OT X,18:NEXT X:FOR Y=2 TO 17:PLOT 1,Y:
   PLOT 18,Y:NEXT Y:POKE 712,34
CA 130 POSITION 7,8:? #6;"SCREEN":POSITIO
   N 6,10:? #6;"DISSOLVES"
LU 140 GOSUB 230:? "SPIRAL DELAY VALUE 20
   00"
```

```
CP 141 T=USR(ADR(SPCHDIS$),SCR+189,HDN1+189,2000,SCR,SCR+399,38,202,148,70,0):?
AB 145 GOSUB 230:? CHR$(125)
TA 150 ? "SPIRAL DELAY VALUE 6000":T=USR(ADR(SPCHDIS$),SCR+189,HDN2+189,6000,SCR,SCR+399,40,200,146,234,2)
LV 160 GOSUB 230:? CHR$(125);"SWEEP DELAY VALUE 3000":T=USR(ADR(SWPDIS$),SCR,HDN1,3000,38,202,148,70,0)
AE 170 GOSUB 230:? CHR$(125);"SWEEP DELAY VALUE 9000":T=USR(ADR(SWPDIS$),SCR,HDN2,9000,40,200,146,234,2)
PZ 180 GOSUB 230:? CHR$(125);"CHANGES AT INCREASING DELAY VALUES":GOSUB 260:GOSUB 260:X=1000
OL 190 ? "SPIRAL DELAY VALUE ";X:T=USR(ADR(SPCHDIS$),SCR+189,HDN1+189,X,SCR,SCR+399,38,202,148,70,0):GOSUB 260
IL 200 ? CHR$(125);"SWEEP DELAY VALUE ";X:T=USR(ADR(SWPDIS$),SCR,HDN2,X,40,200,146,234,2):GOSUB 260
AW 210 X=X+1000:IF X>65000 THEN END
CN 220 ? CHR$(125):POKE 77,0:GOTO 190
JF 230 POKE 53279,8:? "HIT OPTION TO GO ON"
UD 240 IF PEEK(53279)<>3 THEN 240
ZI 250 RETURN
LW 260 FOR T=1 TO 700:NEXT T:RETURN
PH 270 REM SPIRAL DISSOLVE SUBROUTINE
SL 280 DIM SPCHDIS$(413):RESTORE 290:FOR I=1 TO 413:READ Z:SPCHDIS$(I,I)=CHR$(Z):NEXT I:RETURN
ZN 290 DATA 104,104,133,204,104,133,203,104,133,206,104,133,205,104,141,255,3,141,1,4
CS 300 DATA 104,141,254,3,141,0,4,104,141,42,4,104,141,41,4,104,141,44,4,104
ND 310 DATA 141,43,4,216,162,10,169,0,168,133,207,133,208,177,205,145,203,169,1,141
JE 320 DATA 253,3,230,207,24,165,203,105,1,133,203,165,204,105,0,133,204,24,165,205
OO 330 DATA 105,1,133,205,165,206,105,0,133,206,165,204,205,42,4,240,4,144,13,176
CW 340 DATA 7,165,203,205,41,4,144,4,177,205,145,203,238,253,3,173,253,3,197,207
UG 350 DATA 144,198,240,196,32,2,4,24,144,2,16,181,169,1,141,253,3,230,208,24
HD 360 DATA 169,20,101,203,133,203,165,204,105,0,133,204,24,169,20,101,205,133,205,165
GG 370 DATA 206,105,0,133,206,165,204,205,42,4,240,4,144,33,176,7,165,203,205,41
WY 380 DATA 4,144,24,165,204,205,44,4,240,4,176,15,144,9,165,203,205,43,4,240
LA 390 DATA 2,176,4,177,205,145,203,238,253,3,173,253,3,197,208,144,178,240,176,32
IQ 395 DATA 2,4,24,144,2,16,159,169,1,141,253,3,230,207,56,165,203,233,1,133
RX 400 DATA 203,165,204,233,0,133,204,56,165,205,233,1,133,205,165,206,233,0,133,206
OF 405 DATA 165,204,205,44,4,240,4,176,15,144,9,165,203,205,43,4,240,2,176,4
KU 410 DATA 177,205,145,203,238,253,3,173,253,3,197,207,144,196,240,194,32,2,4,24
RL 415 DATA 144,2,16,177,169,1,141,253,3,230,208,56,165,203,233,20,133,203,165,204
YP 420 DATA 233,0,133,204,56,165,205,233,20,133,205,165,206,233,0,133,206,165,204,205
LI 425 DATA 42,4,240,4,144,33,176,7,165,203,205,41,4,144,24,165,204,205,44,4
WB 430 DATA 240,4,176,15,144,9,165,203,205,43,4,240,2,176,4,177,205,145,203,238
EP 435 DATA 253,3,173,253,3,197,208,144,178,240,176,32,2,4,202,208,161,162,0,104
OT 440 DATA 104,157,22,208,157,196,2,232,224,5,208,243,96
GI 450 REM DELAY SUBROUTINE
FP 460 RESTORE 470:FOR I=1026 TO 1064:READ Z:POKE I,Z:NEXT I:RETURN
RA 470 DATA 173,254,3,240,5,206,254,3,208,251,173,255,3,240,11,206,255,3,169,255
XI 480 DATA 141,254,3,24,144,235,173,0,4,141,254,3,173,1,4,141,255,3,96
YT 490 REM SWEEP DISSOLVE SUBROUTINE
LB 500 DIM SWPDIS$(189):RESTORE 510:FOR I=1 TO 189:READ Z:SWPDIS$(I,I)=CHR$(Z):NEXT I:RETURN
ZA 510 DATA 104,104,133,204,104,133,203,104,133,206,104,133,205,104,141,255,3,141,1,4
JR 520 DATA 104,141,254,3,141,0,4,216,160,0,169,10,141,253,3,162,20,177,205,145
OC 530 DATA 203,24,165,203,105,20,133,203,165,204,105,0,133,204,24,165,205,105,20,133
SF 540 DATA 205,165,206,105,0,133,206,202,208,223,56,165,203,233,19,133,203,165,204,233
WX 550 DATA 0,133,204,56,165,205,233,19,133,205,165,206,233,0,133,206,162,20,32,2
RO 560 DATA 4,24,144,2,208,185,177,205,145,203,56,165,203,233,20,133,203,165,204,233
OX 570 DATA 0,133,204,56,165,205,233,20,133,205,165,206,233,0,133,206,202,208,223,24
KZ 580 DATA 165,203,105,21,133,203,165,204,105,0,133,204,24,165,205,105,21,133,205,165
NB 590 DATA 206,105,0,133,206,32,2,4,206,253,3,208,187,162,0,104,104,157,22,208
YH 600 DATA 157,196,2,232,224,5,208,243,96
PV 610 REM DRAW FIRST HIDDEN SCREEN
OI 620 B=PEEK(559):POKE 559,0:RESTORE 710:FOR V=0 TO 14:READ W,X,Y,Z:COLOR 43:PLOT W,X:DRAWTO Y,Z:NEXT V
XM 630 FOR V=0 TO 9:READ W,X,Y,Z:COLOR 10:PLOT W,X:DRAWTO Y,Z:NEXT V
EX 640 FOR W=1 TO 17:READ X,Y,Z:COLOR X:PLOT Y,Z:NEXT W
CV 650 FOR X=0 TO 18 STEP 2:COLOR 154:PLOT X,0:COLOR 186:PLOT X,19:NEXT X
AI 660 FOR X=1 TO 19 STEP 2:COLOR 186:PLOT X,0:COLOR 154:PLOT X,19:NEXT X
RS 670 FOR Y=2 TO 18 STEP 2:COLOR 154:PLOT 0,Y:COLOR 186:PLOT 19,Y:NEXT Y
NB 680 FOR Y=1 TO 17 STEP 2:COLOR 186:PLOT 0,Y:COLOR 154:PLOT 19,Y:NEXT Y
MD 690 COLOR 189:FOR X=11 TO 13:PLOT X,2:NEXT X:COLOR 172:FOR X=14 TO 16:PLOT X,2:NEXT X
HJ 700 COLOR 174:FOR X=9 TO 10:PLOT X,2:NEXT X:PLOT 8,1:RETURN
CJ 710 DATA 7,2,7,9,8,4,8,7,9,5,9,7,7,10,7,11,13,7,17,7,12,9,12,10,13,8,13,10,14,10,14,11
VK 720 DATA 14,12,15,12,3,12,4,12,1,13,4,13,1,14,5,14,1,15,2,15,8,15,8,17,9,15,9,17
OC 730 DATA 13,3,13,4,6,2,6,7,13,5,14,5,15,4,15,6,5,5,5,7,1,7,3,7,14,14,15,14,1
```

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```
   5,15,18,15,8,14,12,14,10,15,10,17
HW 740 DATA 39,2,3,35,3,3,35,17,2,33,12,6
   ,40,13,6,34,14,6
PZ 750 DATA 36,2,10,38,3,10,36,4,10,34,9,
   11,37,10,11,34,11,11
SF 760 DATA 33,17,10,36,2,17,37,14,17,40,
   15,17,37,16,17
EJ 770 DATA 62,18,0,63,19,0,92,18,1,93,19
   ,1,140,15,0,19,4,157,14,1,18,5,142,12,
   1,13,1,142,18,6,18,7
ZB 780 DATA 11,12,15,16,10,12,17,19,10,13
   ,16,19,10,14,15,19,9,14,14,19,8,14,13,
   19,8,15,12,19,7,15,11,19
XJ 790 DATA 9,18,10,19,0,2,2,4,0,3,5,8,0,
   4,4,8,0,5,4,9,0,6,2,8,0,7,1,8
EP 800 DATA 175,7,8,9,8,175,9,9,9,10,188,
   7,9,7,11,188,6,10,6,12,188,5,10,5,11,1
   73,3,12,5,14
GU 810 REM REDEFINE CHARACTER SET
CW 820 GRAPHICS 1:START=(PEEK(106)-8)*256
   :SHI=INT(START/256):SLO=START-SHI*256:
   POKE 203,SLO:POKE 204,SHI
OG 830 DIM CHAR$(28):CHAR$="h[illegible]
   [illegible]":Z=USR(ADR(CHAR$)):REST
   ORE 860
OG 840 FOR T=1 TO 21:READ X:FOR Y=0 TO 7:
   READ Z:POKE X+Y+START,Z:NEXT Y:NEXT T
MW 850 DLST=PEEK(560)+256*PEEK(561):HDN1=
   PEEK(DLST+4)+256*PEEK(DLST+5):RETURN
XU 860 DATA 8,165,231,231,231,255,219,255
   ,231,16,66,231,165,231,165,231,255,255
   ,24,161,162,228,232,240,227,227,227
XW 870 DATA 32,5,69,231,231,167,255,255,2
   31,40,24,60,126,66,126,219,255,255,48,
   0,0,0,36,36,36,255,255
XM 880 DATA 56,153,153,153,153,153,255,15
   3,255,64,0,0,0,0,165,255,219,255,80,0,
   24,60,126,60,24,24,24
XH 890 DATA 88,4,14,63,115,0,48,120,252,9
   6,0,44,68,254,76,44,20,22,104,0,52,34,
   127,50,52,40,104
IS 900 DATA 208,255,255,255,255,255,255,2
   55,255,112,0,24,8,40,106,28,20,20,120,
   0,24,16,20,86,56,20,20
CG 910 DATA 224,0,50,36,120,112,112,80,80
   ,232,0,76,36,30,14,14,10,10
OD 920 DATA 240,160,224,160,240,248,252,2
   54,255,248,1,1,1,3,167,239,191,253
SF 930 DATA 480,255,239,231,231,103,39,7,
   7,488,191,239,255,254,252,248,240,192
```

LISTING 2

```
OF 2 REM DISSOLVE SUBROUTINE CREATOR
DH 3 REM BY FRED PINHO
OM 4 REM (C) 1985, ANTIC PUBLISHING INC.
XM 10 DIM SPRCHR$(413),SPRBIT$(417),SWEEP
   $(189),NMB$(2),Z$(1)
CE 20 OPEN #3,4,0,"K:"
XI 30 ? "KGRAPHICS MODE DESIRED(0-15)";:L
   INE=30:GOSUB 310:G=NMB
TN 40 IF G<0 OR G>15 THEN GOSUB 400:GOTO
   30
SH 50 ? "DO YOU WANT A:":? "  1.SPIRAL DI
   SSOLVE":? "  2.SWEEP DISSOLVE":? "   I
   NPUT NUMBER";:LINE=50
NR 60 GOSUB 310:D=NMB:IF D<>1 AND D<>2 TH
   EN GOSUB 400:GOTO 50
AY 70 ? "WORKING.":IF D=2 THEN 260
EK 80 IF (G<3 OR G=12 OR G=13) THEN F=1:G
   OTO 170
WM 90 GOSUB 740:GOSUB 1110:GOSUB 410
HY 100 ? #1;"31999 REM SPIRAL DISSOLVE FO
   R BIT-MAPPED MODES(GR.3-11,14-15)":? #
   1;"32000 DIM SPBTDIS$(417)"
EE 110 ? #1;"32005 SPBTDIS$(1,85)=";CHR$(
   34);SPRBIT$(1,85);CHR$(34)
ZJ 120 ? #1;"32010 SPBTDIS$(86,170)=";CHR
   $(34);SPRBIT$(86,170);CHR$(34)
MN 130 ? #1;"32015 SPBTDIS$(171,255)=";CH
   R$(34);SPRBIT$(171,255);CHR$(34)
FK 140 ? #1;"32020 SPBTDIS$(256,340)=";CH
   R$(34);SPRBIT$(256,340);CHR$(34)
GQ 150 ? #1;"32025 SPBTDIS$(341,417)=";CH
   R$(34);SPRBIT$(341,417);CHR$(34):GOSUB
   470
PI 160 ? #1;"32200 RETURN":GOTO 300
AG 170 GOSUB 510:GOSUB 1080:GOSUB 410
VW 180 ? #1;"32029 REM SPIRAL DISSOLVE FO
   R CHARACTER MODES(0-2,12,13)"
LT 190 ? #1;"32030 DIM SPCHDIS$(413)"
TN 200 ? #1;"32035 SPCHDIS$(1,85)=";CHR$(
   34);SPRCHR$(1,85);CHR$(34)
OO 210 ? #1;"32040 SPCHDIS$(86,170)=";CHR
   $(34);SPRCHR$(86,170);CHR$(34)
BQ 220 ? #1;"32045 SPCHDIS$(171,255)=";CH
   R$(34);SPRCHR$(171,255);CHR$(34)
UN 230 ? #1;"32050 SPCHDIS$(256,340)=";CH
   R$(34);SPRCHR$(256,340);CHR$(34)
HP 240 ? #1;"32055 SPCHDIS$(341,413)=";CH
   R$(34);SPRCHR$(341,413);CHR$(34):GOSUB
   470
PH 250 ? #1;"32200 RETURN":GOTO 300
EM 260 GOSUB 970:GOSUB 1230:GOSUB 410:? #
   1;"32059 REM SWEEP DISSOLVE(ALL MODES)
   ":? #1;"32060 DIM SWPDIS$(189)"
YQ 270 ? #1;"32065 SWPDIS$(1,85)=";CHR$(3
   4);SWEEP$(1,85);CHR$(34)
BR 280 ? #1;"32070 SWPDIS$(86,170)=";CHR$
   (34);SWEEP$(86,170);CHR$(34)
MI 290 ? #1;"32075 SWPDIS$(171,189)=";CHR
   $(34);SWEEP$(171,189);CHR$(34):GOSUB 4
   70:? #1;"32200 RETURN"
MG 300 ? "LISTING COMPLETED.":END
NV 310 A=PEEK(16)-128:IF A<0 THEN 330
VO 320 POKE 16,A:POKE 53774,A
GN 330 XX=1:NMB$="":? "?";
FO 340 GET #3,A:? CHR$(A);:Z$=STR$(0)
AC 350 IF A=155 OR XX=3 THEN 380
WL 360 IF A<48 OR A>57 THEN ? :GOSUB 400:
   POP :GOTO LINE
OP 370 NMB$(XX,XX)=CHR$(A):XX=XX+1:GOTO 3
   40
LL 380 IF LEN(NMB$)=0 THEN GOSUB 400:POP
   :GOTO LINE
HJ 390 NMB=VAL(NMB$):? :RETURN
NR 400 ? "[illegible]INCORRECT RESPONSE! PLEASE TRY
   AGAIN!":FOR T=1 TO 100:NEXT T:RETURN
JO 410 ? "LISTING ROUTINE TO DISK AS "
XA 420 IF D=2 THEN 460
UR 430 IF F THEN 450
BW 440 ? "  D:SPRBITDS.LST":OPEN #1,8,0,"
   D:SPRBITDS.LST":RETURN
XA 450 ? "  D:SPRCHRDS.LST":OPEN #1,8,0,"
   D:SPRCHRDS.LST":RETURN
LH 460 ? "  D:SWEEPDIS.LST":OPEN #1,8,0,"
   D:SWEEPDIS.LST":RETURN
AG 470 ? #1;" 32099 REM DELAY ROUTINE":?
   #1;"32100 RESTORE 32110:FOR I=1026 TO
   1064:READ Z:POKE I,Z:NEXT I"
RV 480 ? #1;"32110 DATA 173,254,3,240,5,2
   06,254,3,208,251,173,255,3,240,11,206,
   255,3,169,255"
DT 490 ? #1;"32120 DATA 141,254,3,24,144,
   235,173,0,4,141,254,3,173,1,4,141,255,
   3,96":RETURN
YN 500 REM SPIRAL DISSOLVE FOR CHARACTER
   MODES(GR.0-2,12,13)
OL 510 RESTORE 520:FOR I=1 TO 413:READ Z:
   SPRCHR$(I,I)=CHR$(Z):NEXT I:RETURN
ZC 520 DATA 104,104,133,204,104,133,203,1
   04,133,206,104,133,205,104,141,255,3,1
   41,1,4
DA 530 DATA 104,141,254,3,141,0,4,104,141
   ,42,4,104,141,41,4,104,141,44,4,104
NL 540 DATA 141,43,4,216,162,10,169,0,168
```

```
   ,133,207,133,208,177,205,145,203,169,1
   ,141
JM 550 DATA 253,3,230,207,24,165,203,105,
   1,133,203,165,204,105,0,133,204,24,165
   ,205
OW 560 DATA 105,1,133,205,165,206,105,0,1
   33,206,165,204,205,42,4,240,4,144,13,1
   76
DE 570 DATA 7,165,203,205,41,4,144,4,177,
   205,145,203,238,253,3,173,253,3,197,20
   7
UO 580 DATA 144,198,240,196,32,2,4,24,144
   ,2,16,181,169,1,141,253,3,230,208,24
HL 590 DATA 169,20,101,203,133,203,165,20
   4,105,0,133,204,24,169,20,101,205,133,
   205,165
FV 600 DATA 206,105,0,133,206,165,204,205
   ,42,4,240,4,144,33,176,7,165,203,205,4
   1
WN 610 DATA 4,144,24,165,204,205,44,4,240
   ,4,176,15,144,9,165,203,205,43,4,240
KP 620 DATA 2,176,4,177,205,145,203,238,2
   53,3,173,253,3,197,208,144,178,240,176
   ,32
HS 630 DATA 2,4,24,144,2,16,159,169,1,141
   ,253,3,230,207,56,165,203,233,1,133
SH 640 DATA 203,165,204,233,0,133,204,56,
   165,205,233,1,133,205,165,206,233,0,13
   3,206
OC 650 DATA 165,204,205,44,4,240,4,176,15
   ,144,9,165,203,205,43,4,240,2,176,4
LG 660 DATA 177,205,145,203,238,253,3,173
   ,253,3,197,207,144,196,240,194,32,2,4,
   24
RK 670 DATA 144,2,16,177,169,1,141,253,3,
   230,208,56,165,203,233,20,133,203,165,
   204
ZD 680 DATA 233,0,133,204,56,165,205,233,
   20,133,205,165,206,233,0,133,206,165,2
   04,205
LJ 690 DATA 42,4,240,4,144,33,176,7,165,2
   03,205,41,4,144,24,165,204,205,44,4
VY 700 DATA 240,4,176,15,144,9,165,203,20
   5,43,4,240,2,176,4,177,205,145,203,238

DZ 710 DATA 253,3,173,253,3,197,208,144,1
   78,240,176,32,2,4,202,208,161,162,0,10
   4
OS 720 DATA 104,157,22,208,157,196,2,232,
   224,5,208,243,96
ZQ 730 REM SPIRAL DISSOLVE FOR BIT-MAPPED
    MODES
ZK 740 RESTORE 750:FOR I=1 TO 417:READ Z:
   SPRBIT$(I,I)=CHR$(Z):NEXT I:RETURN
ZK 750 DATA 104,104,133,204,104,133,203,1
   04,133,206,104,133,205,104,141,255,3,1
   41,1,4
JC 760 DATA 104,141,254,3,141,0,4,104,141
   ,42,4,104,141,41,4,104,133,213,104,133

TI 770 DATA 212,104,141,44,4,104,141,43,4
   ,104,133,215,104,133,214,216,162,9,169
   ,0
XL 780 DATA 133,207,133,208,177,205,145,2
   03,169,1,141,253,3,230,207,160,0,24,16
   5,203
KG 790 DATA 105,1,133,203,165,204,105,0,1
   33,204,24,165,205,105,1,133,205,165,20
   6,105
LT 800 DATA 0,133,206,177,205,145,203,238
   ,253,3,173,253,3,197,207,144,216,240,2
   14,32
IH 810 DATA 2,4,24,144,2,16,197,169,1,141
   ,253,3,230,208,160,0,24,169,20,101
TD 820 DATA 203,133,203,165,204,105,0,133
   ,204,24,169,20,101,205,133,205,165,206
   ,105,0
CV 830 DATA 133,206,177,205,145,203,238,2
   53,3,173,253,3,197,208,144,216,240,214
   ,32,2
XA 840 DATA 4,24,144,2,16,195,169,1,141,2
   53,3,230,207,160,0,56,165,203,233,1
PY 850 DATA 133,203,165,204,233,0,133,204
   ,56,165,205,233,1,133,205,165,206,233,
   0,133
YL 860 DATA 206,177,205,145,203,238,253,3
   ,173,253,3,197,207,144,216,240,214,138
   ,240,62
YS 870 DATA 32,2,4,24,144,2,16,192,169,1,
   141,253,3,230,208,160,0,56,165,203
FJ 880 DATA 233,20,133,203,165,204,233,0,
   133,204,56,165,205,233,20,133,205,165,
   206,233
OV 890 DATA 0,133,206,177,205,145,203,238
   ,253,3,173,253,3,197,208,144,216,240,2
   14,32
KW 900 DATA 2,4,202,16,197,173,41,4,133,2
   03,173,42,4,133,204,173,43,4,133,205
GG 910 DATA 173,44,4,133,206,162,30,169,2
   0,133,216,177,205,145,203,177,214,145,
   212,24
IS 920 DATA 165,203,105,1,133,203,165,204
   ,105,0,133,204,24,165,205,105,1,133,20
   5,165
HK 930 DATA 206,105,0,133,206,56,165,212,
   233,1,133,212,165,213,233,0,133,213,56
   ,165
WO 940 DATA 214,233,1,133,214,165,215,233
   ,0,133,215,198,216,208,192,32,2,4,202,
   208
GS 950 DATA 182,162,0,104,104,157,22,208,
   157,196,2,232,224,5,208,243,96
NZ 960 REM SWEEP DISSOLVE FOR ALL MODES
LX 970 RESTORE 980:FOR I=1 TO 189:READ Z:
   SWEEP$(I,I)=CHR$(Z):NEXT I:RETURN
ZS 980 DATA 104,104,133,204,104,133,203,1
   04,133,206,104,133,205,104,141,255,3,1
   41,1,4
KJ 990 DATA 104,141,254,3,141,0,4,216,160
   ,0,169,10,141,253,3,162,20,177,205,145

PB 1000 DATA 203,24,165,203,105,20,133,20
   3,165,204,105,0,133,204,24,165,205,105
   ,20,133
XZ 1010 DATA 205,165,206,105,0,133,206,20
   2,208,223,56,165,203,233,19,133,203,16
   5,204,233
QZ 1020 DATA 0,133,204,56,165,205,233,19,
   133,205,165,206,233,0,133,206,162,20,3
   2,2
SB 1030 DATA 4,24,144,2,208,185,177,205,1
   45,203,56,165,203,233,20,133,203,165,2
   04,233
OQ 1040 DATA 0,133,204,56,165,205,233,20,
   133,205,165,206,233,0,133,206,202,208,
   223,24
OJ 1050 DATA 165,203,105,21,133,203,165,2
   04,105,0,133,204,24,165,205,105,21,133
   ,205,165
DM 1060 DATA 206,105,0,133,206,32,2,4,206
   ,253,3,208,187,162,0,104,104,157,22,20
   8
ZA 1070 DATA 157,196,2,232,224,5,208,243,
   96
YW 1080 IF (G=1 OR G=2) THEN 1100
SL 1090 SPRCHR$(46)=CHR$(20):SPRCHR$(142)
   =CHR$(40):SPRCHR$(155)=CHR$(40):SPRCHR
   $(316)=CHR$(40):SPRCHR$(329)=CHR$(40)
XF 1100 SPRCHR$(413)=CHR$(96):RETURN
GC 1110 IF (G=3 OR G=4) THEN 1150
NN 1120 IF (G=5 OR G=6 OR G=14) THEN 1170

XN 1130 SPRBIT$(58)=CHR$(19):SPRBIT$(139)
   =CHR$(40):SPRBIT$(152)=CHR$(40):SPRBIT
   $(262)=CHR$(40):SPRBIT$(275)=CHR$(40)
MH 1140 SPRBIT$(329)=CHR$(40):GOTO 1170
XC 1150 SPRBIT$(58)=CHR$(4):SPRBIT$(139)=
   CHR$(10):SPRBIT$(152)=CHR$(10):SPRBIT$
   (262)=CHR$(10):SPRBIT$(275)=CHR$(10)
PR 1160 SPRBIT$(329)=CHR$(10)
```

continued on next page

```
XG 1170 RESTORE 1210:FOR Y=3 TO 11:READ Z
   :IF Y=G THEN SPRBIT$(327)=CHR$(Z):POP
   :GOTO 1220
MJ 1180 NEXT Y
KN 1190 IF G=14 THEN SPRBIT$(327)=CHR$(70
   )
IP 1200 IF G=15 THEN SPRBIT$(327)=CHR$(60
   )
TI 1210 DATA 5,15,10,30,20,60,76,76,76,60

AW 1220 SPRBIT$(417)=CHR$(96):RETURN
HW 1230 IF (G=1 OR G=2 OR G=5 OR G=6 OR G
   =14) THEN 1300
MU 1240 IF (G=0 OR G=15 OR (G>6 AND G<14)
   ) THEN 1280
OL 1250 SWEEP$(32)=CHR$(5):SWEEP$(46)=CHR
   $(10):SWEEP$(59)=CHR$(10):SWEEP$(75)=C
   HR$(9):SWEEP$(88)=CHR$(9)
FO 1260 SWEEP$(115)=CHR$(10):SWEEP$(128)=
   CHR$(10):SWEEP$(144)=CHR$(11):SWEEP$(1
   57)=CHR$(11)
OX 1270 GOTO 1300
GW 1280 SWEEP$(32)=CHR$(20):SWEEP$(46)=CH
   R$(40):SWEEP$(59)=CHR$(40):SWEEP$(75)=
   CHR$(39):SWEEP$(88)=CHR$(39)
FB 1290 SWEEP$(115)=CHR$(40):SWEEP$(128)=
   CHR$(40):SWEEP$(144)=CHR$(41):SWEEP$(1
   57)=CHR$(41)
XX 1300 RESTORE 1320:FOR Y=0 TO 15:READ Z
   :IF Y=G THEN SWEEP$(37)=CHR$(Z):SWEEP$
   (98)=CHR$(Z):POP :GOTO 1330
LS 1310 NEXT Y
CM 1320 DATA 24,20,10,20,40,40,80,80,160,
   192,192,192,20,10,160,160
XT 1330 SWEEP$(189)=CHR$(96):RETURN
```

a Dungeons & Dragons scorekeeper. . .and more

DUNGEON MASTER'S APPRENTICE

Article on page 21

LISTING 1

Don't type the TYPO II Codes!

```
HG 0 DATA Main Menu
IT 1 REM DUNGEONS
OM 2 REM BY ERNIE NEGUS
OL 3 REM (c) 1985, ANTIC PUBLISHING INC.
DA 43 POKE 53277,0:GOTO 100:DATA Q
US 44 GRAPHICS 0:GOSUB 830:RESTORE L:N=0:
   GOTO 50
DM 45 IF L<40 THEN L=L+1:RESTORE L
VP 50 READ A$:IF A$="Q" THEN X=2:Y=1:Z=1:
   POSITION 7,21:? B$:GOTO 60
IF 55 POKE 752,1:N=N+1:Y=N:Y=N-19*(N>19):
   X=2+20*(N>19):POSITION X,Y:? "o ";A$:G
   OTO 45
ZA 60 GOSUB 830:POKE 53277,4:S=STICK(0):I
   F S=15 THEN O=10:GOTO 90
EK 65 POKE 53277,4:O=O-2:POKE 53279,1:POS
   ITION X,Y:? "o":IF S=14 AND Y>1 THEN Y
   =Y-1
RV 70 IF S=13 AND Y<N AND Y<19 THEN Y=Y+1

RM 75 IF S=7 AND Y+18<N THEN X=22
DA 80 IF S=11 THEN X=2
VB 85 Z=Y+19*(X=22):IF Z>N THEN Y=Y-1:GOT
   O 85
CE 86 FOR NN=1 TO 50:NEXT NN
RA 90 POSITION X,Y:? "•":IF STRIG(0) THEN
    FOR S=1 TO O:NEXT S:GOTO 60
LL 95 POKE 53277,0:FOR NN=1 TO 50:NEXT NN
   :RETURN
IX 100 DIM A$(33),B$(33),C$(16),D$(16)
HS 110 POKE 764,255:TRAP 110:POKE 842,12:
   L=100:B$="Please Make Selection"
SW 120 DATA Roll Dice,Create Character,Di
   splay Character,Save Character,Load Ch
   aracter,Auto-Combat,Q
VV 130 GOSUB 44
KI 140 ON Z GOTO 150,210,370,430,450,490
DO 150 B$="How many throws?":L=150:GOSUB
   44:DATA Main Menu,1,2,3,4,5,6,7,8,9,10
   ,11,12,13,14,15,16,17,18,19,20,21,Q
YR 160 T=Z-1:IF Z=1 THEN 110
JV 170 M=0:B$="What kind of Die?":L=170:G
   OSUB 44:RESTORE L:? "↖↓Die Rolls↓↓↓↓":
   DATA 2,3,4,6,8,10,12,20,100,Q
SH 180 FOR X=1 TO Z:READ Y:NEXT X:FOR X=1
    TO T:N=INT(RND(0)*Y)+1:? N;" ";:M=M+N
   :NEXT X:? :? "↓↓Total=";M
ZO 190 POKE 752,1:IF STRIG(0) THEN POSITI
   ON 7,21:? "Press trigger for menu":GOT
   O 190
NK 200 GOTO 150
UE 210 TRAP 110:? "↖":? "Enter name of Ch
   aracter";:INPUT C$:L=210:B$="Enter cla
   ss of character":GOSUB 44
LH 220 DATA Main Menu,Monster,Fighter,Pal
   adin,Anti-Paladin,Ranger,Cavalier,Barb
   arian,Bard,Cleric,Druid,Monk,Ninja
LF 230 IF Z=1 THEN 110:DATA Thief,Assassi
   n,Magic User,Illusionist,Q
GH 240 CL=Z-1:IF CL=1 THEN B$="Enter Hit
   die. 0 for Menu":GOTO 260
GO 250 B$="Combatant Level. 0 for Menu "
LC 260 GOSUB 700:L=260+C:GOSUB 44
NS 261 DATA 0,Up to 1-1,1-1,1,1+,2-3+,4-5
   +,6-7+,8-9+,10-11+,12-13+,14-15+,16+,Q

YE 262 DATA 0,1,2,3,4,5,6,7,8,9,10,11,12,
   13,14,15,16,17+,Q
AI 263 DATA 0,1,2,3,4,5,6,7,8,9,10,11,12,
   13,14,15,16,17,18,19+,Q
LW 265 DATA 0,1,2,3,4,5,6,7,8,9,10,11,12,
   13,14,15,16,17,18,19,20,21+,Q
MQ 270 LE=Z-1:IF LE=0 THEN 110
NF 280 B$="Armor Class":L=280:GOSUB 44:AC
   =Z-12:IF Z=1 THEN 110
JS 290 DATA Main Menu,-10,-9,-8,-7,-6,-5,
   -4,-3,-2,-1,0,1,2,3,4,5,6,7,8,9,10,Q
IK 300 B$="Bonus to hit":L=300:GOSUB 44:B
   H=Z-1
AM 310 DATA 0,1,2,3,4,5,6,7,8,9,10,11,12,
   13,14,15,16,17,18,19
FL 312 DATA 20,21,22,23,24,25,26,27,28,29
   ,30,31,32,33,34,35,36,37,Q
HO 320 B$="Defensive Adjustment":L=310:GO
   SUB 44:DE=Z-1
AX 330 B$="Damage Adjustment":L=310:GOSUB
    44:DA=Z-1:L=0
GP 340 RESTORE L:L=L+1:READ A$:IF A$<>"Q"
    THEN 340
SD 350 GRAPHICS 0:POKE 709,4:POSITION 2,5
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   :? L-1;" DATA ";C$;",";CL;",";LE;",";A
   C;",";BH;",";DE;",";DA:? "G.110"
OK 360 POSITION 2,1:POKE 842,13:STOP
JF 370 B$="Select Character":L=0:GOSUB 44
   :IF Z=1 THEN 110
LO 380 RESTORE Z-1:READ A$,CL,LE,AC,BH,DE
   ,DA
UX 390 ? "↖↓↓↓":? A$:RESTORE 220:FOR X=1
   TO CL+1:READ A$:NEXT X:L=LE:? A$;" ";:
   GOSUB 670:?
SL 400 ? "Armor Class = ";AC:? "Bonus to
   hit = ";BH:? "Defense Adjust = ";DE:?
   "Damage Adjust = ";DA
CI 410 POSITION 5,21:? "Press trigger for
    Menu":IF STRIG(0) THEN POKE 752,1:GOT
   O 410
PG 420 GOTO 370
FW 430 ? "↖":? "Enter Filename";:INPUT C$
   :GOSUB 800
UZ 435 POKE 755,1:POSITION 2,7:? "  ◘■SAV
   ING":POSITION 2,4:POKE 764,12
FO 440 LET SAVING=110:LIST C$,1,30:END
WZ 450 POKE 559,0:FOR L=1 TO 38 STEP 19:?
    "↖↓↓":FOR X=L TO L+19:? X:NEXT X:? "G
   .460":POKE 842,13:POSITION 2,0:STOP
CD 460 POKE 842,12:NEXT L
HS 470 ? "↖":POKE 559,34:? "Enter Filenam
   e";:INPUT C$:GOSUB 800
SX 475 POKE 755,1:POSITION 2,7:? "  ◘■LOA
   DING":POSITION 2,5:POKE 764,12
XY 480 LET LOADING=110:ENTER C$:END
AR 490 L=0:B$="Choose Attacker":GOSUB 44:
   IF Z=1 THEN 110
YE 500 A=Z-1:L=0:B$="Choose Defender":GOS
   UB 44:IF Z=1 THEN 110
ZN 510 RESTORE A:READ A$:? "↖↓":? A$;" sw
   ings at ";:READ CL,L,D,BH,D,DA
WE 520 RESTORE Z-1:READ A$:? A$:? :READ D
   ,D,AC,D,DE,D
RJ 530 RESTORE 220:FOR X=1 TO CL+1:READ A
   $:NEXT X
AV 540 GOSUB 700:K=(INT((L-1)/C)+1)+1:R=1
   960+220*C:R=R+AC*10:RESTORE R:FOR X=1
   TO K:READ AV:NEXT X
CJ 550 ? "Attacker is a ";:GOSUB 670:? "
   ";A$:? "Defender has a ";AC;" Armor cl
   ass"
QY 560 ? :? "Attacker must roll a basic "
   ;AV;" to hit":AV=AV+DE
JT 570 IF DE<>0 THEN ? "Which is modified
    to a ";AV;" by":? "the Defender adjus
   t of ";DE
OR 580 AV=AV-BH:IF BH<>0 THEN ? "The Atta
   cker's bonus to hit of ";BH:? "further
    modifies this to a ";AV:?
ZP 590 IF DA<>0 THEN ? "The Attacker's Da
   mage Adjust is ";DA
IG 600 ? :? "The roll is ";:Z=INT(RND(0)*
   20)+1:? Z;" and is a ";:IF AV<=Z THEN
   ? "hit":GOTO 620
PL 610 ? "miss"
WA 620 POSITION 8,21:? "Press trigger to
   Continue":IF STRIG(0) THEN POKE 752,1:
   GOTO 620
RV 630 IF AV>Z THEN 490
XT 640 L=170:B$="Maximum Weapon Damage":G
   OSUB 44
KT 650 RESTORE 170:FOR L=1 TO Z:READ K:NE
   XT L:L=650:B$="How many Rolls?":GOSUB
   44:DATA 1,2,3,4,5,6,7,8,9,10,Q
ZM 655 T=0:? "↖↓↓Die Rolls↓↓↓":FOR X=1 TO
    Z:R=INT(RND(0)*K)+1:? R;" ";:T=T+R:NE
   XT X:? :? "↓↓Total = ";T
VL 660 ? "↓↓Attacker Damage Adjust of ";D
   A;" added":? "↓↓Attacker scores ";T+DA
   ;" Hit Points":Z=-50:GOTO 620
EO 670 IF CL<>1 THEN ? "level ";L;:RETURN
JJ 680 RESTORE 260:FOR X=1 TO L+1:READ B$
   :NEXT X
PE 690 ? B$;" Hit Die";:RETURN
MD 700 C=1:IF CL>1 THEN C=2
QC 710 IF CL>8 THEN C=3
GC 720 IF CL>12 THEN C=4
HX 730 IF CL>14 THEN C=5
ZL 740 RETURN
SQ 800 IF C$(1,1)="D" AND (C$(2,2)=":" OR
    C$(3,3)=":") THEN 820
NT 810 D$(1,2)="D:":D$(3)=C$:C$=D$
ZI 820 RETURN
TS 830 POKE 16,112:POKE 53774,112:RETURN
JV 2070 REM MONSTER
PE 2080 DATA -10,26,25,24,23,21,20,20,20,
   20,19,18,17
IS 2090 DATA -9,25,24,23,22,20,20,20,20,1
   9,18,17,16
XP 2100 DATA -8,24,23,22,21,20,20,20,20,1
   8,17,16,15
YR 2110 DATA -7,23,22,21,20,20,20,20,19,1
   7,16,15,14
YJ 2120 DATA -6,22,21,20,20,20,20,19,18,1
   6,15,14,13
NK 2130 DATA -5,21,20,20,20,20,20,18,17,1
   5,14,13,12
MK 2140 DATA -4,20,20,20,20,20,19,17,16,1
   4,13,12,11
JX 2150 DATA -3,20,20,20,20,19,18,16,15,1
   3,12,11,10
DS 2160 DATA -2,20,20,20,20,18,17,15,14,1
   2,11,10,9
ZV 2170 DATA -1,20,20,20,19,17,16,14,13,1
   1,10,09,08
XZ 2180 DATA 0,20,20,19,18,16,15,13,12,10
   ,09,08,07
EC 2190 DATA 1,20,19,18,17,15,14,12,11,09
   ,08,07,06
UJ 2200 DATA 2,19,18,17,16,14,13,11,10,08
   ,07,06,05
SZ 2210 DATA 3,18,17,16,15,13,12,10,09,07
   ,06,05,04
QO 2220 DATA 4,17,16,15,14,12,11,09,08,06
   ,05,04,03
DA 2230 DATA 5,16,15,14,13,11,10,08,07,05
   ,04,03,02
ZO 2240 DATA 6,15,14,13,12,10,09,07,06,04
   ,03,02,01
VB 2250 DATA 7,14,13,12,11,09,08,06,05,03
   ,02,01,00
FV 2260 DATA 8,13,12,11,10,08,07,05,04,02
   ,01,00,-1
CI 2270 DATA 9,12,11,10,09,07,06,04,03,01
   ,00,-1,-2
HN 2280 DATA 10,11,10,09,08,06,05,03,02,0
   0,-1,-2,-3
YN 2290 REM FIGHTERS
GC 2300 DATA -10,25,23,21,20,20,20,18,16,
   14
QW 2310 DATA -9,24,22,20,20,20,19,17,15,1
   3
JY 2320 DATA -8,23,21,20,20,20,18,16,14,1
   2
LJ 2330 DATA -7,22,20,20,20,19,17,15,13,1
   1
EC 2340 DATA -6,21,20,20,20,18,16,14,12,1
   0
RU 2350 DATA -5,20,20,20,19,17,15,13,11,0
   9
KE 2360 DATA -4,20,20,20,18,16,14,12,10,0
   8
VO 2370 DATA -3,20,20,19,17,15,13,11,09,0
   7
ND 2380 DATA -2,20,20,18,16,14,12,10,08,0
   6
VT 2390 DATA -1,20,19,17,15,13,11,09,07,0
   5
SM 2400 DATA 0,20,18,16,14,12,10,08,06,04
YZ 2410 DATA 1,19,17,15,13,11,09,07,05,03
```

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```
ON 2420 DATA 2,18,16,14,12,10,08,06,04,02
RC 2430 DATA 3,17,15,13,11,09,07,05,03,01
EV 2440 DATA 4,16,14,12,10,08,06,02,01,00
GV 2450 DATA 5,15,13,11,09,07,05,03,01,-1
BH 2460 DATA 6,14,12,10,08,06,04,02,00,-2
BM 2470 DATA 7,13,11,09,07,05,03,01,-1,-3
YQ 2480 DATA 8,12,10,08,06,04,02,00,-2,-4
AP 2490 DATA 9,11,09,07,05,03,01,-1,-3,-5
OW 2500 DATA 10,10,08,06,04,02,00,-2,-4
   6
TH 2510 REM CLERICS
CB 2520 DATA -10,25,23,21,20,20,20,19
AX 2530 DATA -9,24,22,20,20,20,19,18
WW 2540 DATA -8,23,21,20,20,20,18,17
BE 2550 DATA -7,22,20,20,20,19,17,16
WU 2560 DATA -6,21,20,20,20,18,16,15
ZV 2570 DATA -5,20,20,20,19,17,15,14
VC 2580 DATA -4,20,20,20,18,16,14,13
WW 2590 DATA -3,20,20,19,17,15,13,12
QG 2600 DATA -2,20,20,18,16,14,12,11
QH 2610 DATA -1,20,19,17,15,13,11,10
GD 2620 DATA 0,20,18,16,14,12,10,9
JT 2630 DATA 1,19,17,15,13,11,9,8
EF 2640 DATA 2,18,16,14,12,10,8,7
DU 2650 DATA 3,17,15,13,11,9,7,6
YJ 2660 DATA 4,16,14,12,10,8,6,5
YX 2670 DATA 5,15,13,11,9,7,5,4
TQ 2680 DATA 6,14,12,10,8,6,4,3
VG 2690 DATA 7,13,11,9,7,5,3,2
PC 2700 DATA 8,12,10,8,6,4,2,1
RX 2710 DATA 9,11,9,7,5,3,1,0
FM 2720 DATA 10,10,8,6,4,2,0,-1
CA 2730 REM THIEVES
UX 2740 DATA -10,26,24,21,20,20,20
AS 2750 DATA -9,25,23,20,20,20,19
XY 2760 DATA -8,24,22,20,20,20,18
DN 2770 DATA -7,23,21,20,20,19,17
ZS 2780 DATA -6,22,20,20,20,18,16
EA 2790 DATA -5,21,20,20,19,17,15
YX 2800 DATA -4,20,20,20,18,16,14
BY 2810 DATA -3,20,20,19,17,15,13
XR 2820 DATA -2,20,20,18,16,14,12
TK 2830 DATA -1,20,20,17,15,13,11
SL 2840 DATA 0,20,19,16,14,12,10
WT 2850 DATA 1,20,18,15,13,11,9
XG 2860 DATA 2,19,17,14,12,10,8
BT 2870 DATA 3,18,16,13,11,9,7
XL 2880 DATA 4,17,15,12,10,8,6
CU 2890 DATA 5,16,14,11,9,7,5
XN 2900 DATA 6,15,13,10,8,6,4
DV 2910 DATA 7,14,12,9,7,5,3
ZU 2920 DATA 8,13,11,8,6,4,2
VT 2930 DATA 9,12,10,7,5,3,1
TP 2940 DATA 10,11,9,6,4,2,0
LH 2950 REM MAGIC USERS
NH 2960 DATA -10,26,24,21,20,20
PH 2970 DATA -9,25,23,20,20,20
WA 2980 DATA -8,24,22,20,20,19
TJ 2990 DATA -7,23,21,20,20,18
WI 3000 DATA -6,22,20,20,19,17
TL 3010 DATA -5,21,20,20,18,16
TP 3020 DATA -4,20,20,17,15,15
UT 3030 DATA -3,20,20,19,16,14
RQ 3040 DATA -2,20,20,18,15,13
ON 3050 DATA -1,20,20,17,14,12
UF 3060 DATA 0,20,19,16,13,11
RL 3070 DATA 1,20,18,15,12,10
FS 3080 DATA 2,19,17,14,11,9
CL 3090 DATA 3,18,16,13,10,8
LM 3100 DATA 4,17,15,12,9,7
IH 3110 DATA 5,16,14,11,8,6
FC 3120 DATA 6,15,13,10,7,5
QD 3130 DATA 7,14,12,9,6,4
NB 3140 DATA 8,13,11,8,5,3
JZ 3150 DATA 9,12,10,7,4,2
IU 3160 DATA 10,11,9,6,3,1
```

random number generator at work

ATARI BINGO CALLER

Article on page 25

LISTING 1

Don't type the TYPO II Codes!

```
WR 1 REM COMPUTER BINGO CALLER
SQ 2 REM BY JAMES PERONE
OL 3 REM (c) 1985, ANTIC PUBLISHING INC.
BW 5 GRAPHICS 0:DIM GAM(75),ASK$(1),BINGO
   $(1)
PE 10 POKE 710,68:POKE 712,148:POKE 709,1
   2:FOR Z=1 TO 10
NW 15 POSITION Z,Z
MU 20 ? "COMPUTER BINGO CALLER"
LW 25 NEXT Z:?
ES 30 ? ,"    by James Perone";
LH 35 COUNT=0
CL 40 FOR X=1 TO 1000:NEXT X
XN 50 FOR X=1 TO 75:GAM(X)=0:NEXT X
GJ 190 COUNT=COUNT+1:IF COUNT>75 THEN RUN

VS 200 NUMB=INT(RND(0)*75)+1
ZX 220 IF NUMB=GAM(NUMB) THEN 200
FL 230 GAM(NUMB)=NUMB
WG 900 IF NUMB>0 AND NUMB<16 THEN GOSUB 3
   000
MC 910 IF NUMB>15 AND NUMB<31 THEN GOSUB
   3010
SA 920 IF NUMB>30 AND NUMB<46 THEN GOSUB
   3020
TU 930 IF NUMB>45 AND NUMB<61 THEN GOSUB
   3030
ZS 940 IF NUMB>60 AND NUMB<76 THEN GOSUB
   3040
CT 990 IF COUNT=1 THEN 1000
IC 992 IF COUNT>1 THEN 1005
HW 997 POSITION 0,21:? "Would you like a
   new number ":INPUT ASK$:IF ASK$="Y" TH
   EN 190
QY 998 POSITION 0,21:? "Would you like to
    play another game ":INPUT ASK$:IF ASK
   $="Y" THEN RUN
MH 999 GRAPHICS 0:END
LO 1000 ? "K          ";"B";"    ";"I";"    ";
   "N";"    ";"G";"    ";"O"
NS 1005 POSITION 0,20:? "
             "
```

```
QP 1010 POSITION 0,20:? "The next number
   is: ";BINGO$;NUMB
DY 1100 POSITION L,P:PRINT NUMB
YD 1500 GOTO 997
RB 3000 L=9:P=NUMB+1:BINGO$="B":RETURN
MH 3010 L=13:P=NUMB-14:BINGO$="I":RETURN
XS 3020 L=17:P=NUMB-29:BINGO$="N":RETURN
LZ 3030 L=21:P=NUMB-44:BINGO$="G":RETURN
AT 3040 L=25:P=NUMB-59:BINGO$="O":RETURN
```

arcade action you can customize

WIREBALL

Article on page 45

LISTING 1

Don't type the TYPO II Codes!

```
KB 10 REM WIREBALL
NU 20 REM BY JEAN GOULET
AO 30 REM (c) 1985, ANTIC PUBLISHING INC.
YB 1020 GOSUB 2200
BW 1030 GOSUB 2450
AF 1070 S=STICK(0):IF DIRX(S)=0 AND DIRY(
   S)=0 THEN 1090
CC 1080 GOSUB 1180
ET 1090 GOSUB 1590
UN 1100 FTIME=FTIME+1:IF FTIME>4-SCREEN T
   HEN GOSUB 1750:FTIME=0
IK 1110 IF POWER=0 THEN GOSUB 1470
DB 1120 IF POWER=1 THEN PTIME=PTIME+1:SOU
   ND 3,31-PTIME,10,10
SZ 1122 IF POWER=1 THEN IF PTIME>30 THEN
   POWER=0:PTIME=0:SETCOLOR 4,0,0:PULSON=
   0
HC 1130 POKE 711,C711:C711=C711+16-256*(C
   711>240):FIND=USR(ADR(FINDCHARS),SCSTA
   RT):IF FIND<>0 THEN 1070
HS 1140 SCORE=SCORE+500:GOSUB 2450:GOTO 1
   070
NO 1180 LOCATE PX+DIRX(S),PY+DIRY(S),C
TJ 1200 IF C=32 THEN 1270
UP 1220 COLOR 32:PLOT PX,PY:PX=PX+DIRX(S)
   :PY=PY+DIRY(S):COLOR ASC("◘"):PLOT PX,
   PY:GOSUB 2030:IF DEATH=0 THEN 1240
SS 1230 GOTO 1930
BS 1240 SOUND 1,200,10,15:SCORE=SCORE+INC
   :SOUND 1,0,0,0
AS 1250 RETURN
ZL 1270 IF DIRY(S) THEN 1330
UP 1280 FOR X=PX+DIRX(S) TO (S=7)*39+(S=1
   1) STEP DIRX(S):LOCATE X,PY,C:IF C=32
   THEN NEXT X:GOTO 1390
UF 1290 POP :COLOR ASC("─"):PLOT PX,PY:DR
   AWTO X,PY:FOR XLOOP=PX TO X-DIRX(S) ST
   EP DIRX(S):COLOR 32:PLOT XLOOP,PY
LK 1300 SOUND 0,XLOOP,10,8:SCORE=SCORE+5
AF 1310 COLOR ASC("◘"):PLOT XLOOP+DIRX(S)
   ,PY:NEXT XLOOP:SOUND 0,0,0,0:PX=X:GOSU
   B 2030:IF DEATH=0 THEN RETURN
SR 1320 GOTO 1930
AZ 1330 FOR Y=PY+DIRY(S) TO (S=13)*22+(S=
   14) STEP DIRY(S):LOCATE PX,Y,C:IF C=32
    THEN NEXT Y:GOTO 1390
TL 1340 POP :COLOR ASC("|"):PLOT PX,PY:DR
   AWTO PX,Y:FOR YLOOP=PY TO Y-DIRY(S) ST
   EP DIRY(S):COLOR 32:PLOT PX,YLOOP
MN 1350 SOUND 0,YLOOP,10,8:SCORE=SCORE+5
GC 1360 COLOR ASC("◘"):PLOT PX,YLOOP+DIRY
   (S):NEXT YLOOP:SOUND 0,0,0,0:PY=Y:GOSU
   B 2030:IF DEATH=0 THEN RETURN
TG 1370 GOTO 1930
QX 1390 COLOR 32:PLOT PX,PY:PX=PX+DIRX(S)
   :PY=PY+DIRY(S)
SL 1400 PX=PX*(PX>0 AND PX<39)+(PX<1)+38*
   (PX>38)
US 1410 PY=PY*(PY>0 AND PY<23)+(PY<1)+22*
   (PY>22)
XS 1420 COLOR ASC("◘"):PLOT PX,PY
AQ 1430 RETURN
HF 1470 IF PULSON=1 AND PX=XR AND PY=YR T
   HEN POWER=1:SETCOLOR 4,4,0:RETURN
NW 1480 IF TIME<19 THEN TIME=TIME+1:RETUR
   N
EX 1490 PULSON= NOT (PULSON):POKE 77,0
IJ 1500 IF PULSON=0 THEN LOCATE XR,YR,C:I
   F C=ASC("◘") THEN COLOR ASC("•"):PLOT
   XR,YR:GOTO 1540
GX 1510 IF PULSON=0 THEN 1540
BR 1520 XR=INT(RND(0)*37)+1:YR=INT(RND(0)
   *21)+1:LOCATE XR,YR,C:IF C<>ASC("•") T
   HEN PULSON=0:GOTO 1540
DY 1530 COLOR ASC("◘"):PLOT XR,YR
ZX 1540 TIME=0
AY 1550 RETURN
UD 1590 DX=DX*SGN(0.1-(EX+DX>38 OR EX+DX<
   1)):DY=DY*SGN(0.1-(EY+DY>22 OR EY+DY<1
   ))
TO 1600 LOCATE EX+DX,EY+DY,C:IF C=32 THEN
    COLOR 32:PLOT EX,EY:COLOR ASC("▮"):EX
   =EX+DX:EY=EY+DY:PLOT EX,EY:RETURN
HB 1610 LOCATE EX+DX,EY,CX:LOCATE EX,EY+D
   Y,CY
AN 1620 IF CX<>32 THEN DX=-DX:GOTO 1660
FO 1630 IF CY<>32 THEN DY=-DY:GOTO 1680
RZ 1640 IF RND(0)>0.5 THEN DY=-DY:GOTO 17
   00
PL 1650 DX=-DX:GOTO 1700
WL 1660 IF CY<>32 THEN DY=-DY:GOTO 1700
LP 1670 COLOR 32:PLOT EX,EY:EY=EY+DY:COLO
   R ASC("▮"):PLOT EX,EY:GOTO 1700
UL 1680 IF CX<>32 THEN DX=-DX:GOTO 1700
EN 1690 COLOR 32:PLOT EX,EY:EX=EX+DX:COLO
   R ASC("▮"):PLOT EX,EY
AN 1700 RETURN
AD 1750 XD=SGN(PX-FX):YD=SGN(PY-FY):DELTA
   X=ABS(PX-FX):DELTAY=ABS(PY-FY)
KV 1760 IF DELTAX>DELTAY THEN DELTAY=DELT
   AY/DELTAX:DELTAX=1:GOTO 1780
AZ 1770 DELTAX=DELTAX/DELTAY:DELTAY=1
YF 1780 XV=DELTAX*XD:YV=DELTAY*YD:COLOR 3
   2:PLOT FX,FY:FX=FX+XV:FY=FY+YV:LOCATE
   FX,FY,C
RB 1790 COLOR ASC("/"):PLOT FX,FY
ZB 1810 IF INT(FX+0.5)=INT(PX) AND INT(FY
   +0.5)=INT(PY) THEN FTOUCH=1:GOTO 1830
UP 1820 GOTO 1870
RH 1830 IF POWER=0 THEN 1930
```

continued on next page

```
MF 1840 IF FTOUCH THEN COLOR ASC("◘"):PLO
   T PX,PY:FX=2:FY=2:POWER=0:SCORE=SCORE+
   100:PULSON=0
QZ 1850 FOR X=-50 TO 50 STEP 5:SOUND 0,AB
   S(X/(4*(X>0)+0.5*(X<=0))),8,15:GOSUB 1
   880:NEXT X:POKE 712,0:VP=0
SV 1860 PTIME=0:SOUND 3,0,0,0:SOUND 0,0,0
   ,0
BK 1870 RETURN
TI 1880 POKE 88,0:POKE 89,6:POSITION 15,0
   :? "SCORE:";SCORE:POKE 54277,7-VP:VP=V
   P+(VP<7):POKE 88,P88:POKE 89,P89
BQ 1890 RETURN
BQ 1930 GOSUB 2070
MN 1940 FOR X=0 TO 240 STEP 20:SOUND 0,X,
   4,15:SOUND 1,240-X/4,10,6:GOSUB 1880:N
   EXT X:SOUND 0,0,0,0:SOUND 1,0,0,0
AD 1950 VP=0:FTOUCH=0:GUY=GUY-1:IF GUY<=0
    THEN 2110
LG 1960 POKE 1536+GUY-1,0
IM 1970 FOR X=GUY-1 TO PX:COLOR ASC("◘"):
   PLOT X,0:COLOR 32:PLOT X,0:NEXT X
PY 1972 FOR Y=0 TO PY:LOCATE PX,Y,C:COLOR
    ASC("◘")
YV 1980 PLOT PX,Y:COLOR C:PLOT PX,Y:NEXT
   Y:COLOR ASC("◘"):PLOT PX,PY
MI 1990 POP :GOTO 1070
GO 2030 DEATH=(C<>ASC("•") AND C<>ASC("◘"
   )):IF C=ASC("◘") THEN POWER=1:SETCOLOR
    4,4,0
FN 2040 IF DEATH=1 AND POWER=1 THEN GOSUB
    2070:COLOR ASC("◘"):PLOT PX,PY:DEATH=
   0:POWER=0:SCORE=SCORE+100:GOSUB 1850
AP 2050 RETURN
YV 2070 COLOR 32:PLOT EX,EY:PLOT FX,FY:FX
   =2:FY=2:EX=3:EY=4:RETURN
OV 2110 POKE 88,0:POKE 89,6
BD 2120 FOR Y=0 TO 7:FOR T=0 TO 9:NEXT T:
   POKE 54277,Y:NEXT Y
XG 2130 POSITION 15,0:? "GAME OVER   ";
PC 2140 FOR Y=-7 TO 7:FOR T=0 TO 9:NEXT T
   :POKE 54277,ABS(Y):NEXT Y
ZI 2150 POSITION 15,0:? "score:";SCORE;"
   ";
CO 2160 FOR Y=-7 TO 7:FOR T=0 TO 9:NEXT T
   :POKE 54277,ABS(Y):NEXT Y:GOTO 2130
VR 2200 POKE 106,PEEK(106)-5:GRAPHICS 0:P
   OKE 559,0:CHSET=(PEEK(106)+1)*256:SCST
   ART=PEEK(88)+256*PEEK(89):POKE 710,0
IC 2210 C711=10:GUY=2:FOR L=0 TO 39:POKE
   1536+L,0:NEXT L
AO 2220 DL=PEEK(560)+256*PEEK(561):POKE D
   L+3,68:FOR X=6 TO 28:POKE DL+X,4:NEXT
   X:POKE 82,0:POKE 752,1
YN 2230 POKE DL+12,2:POKE DL+10,6:POSITIO
   N 6,5:? "WIREBALL":POSITION 33,6:? "By
    Jean Goulet":RESTORE 2200
TL 2240 NDL=DL-3:NDLH=INT(NDL/256):NDLL=N
   DL-256*NDLH:POKE 560,NDLL:POKE 561,NDL
   H
SK 2250 FOR L=NDL TO NDL+5:READ D:POKE L,
   D:NEXT L:DATA 112,96,98,0,6,0
BY 2260 POKE NDL+33,NDLL:POKE NDL+34,NDLH
   :POKE 559,34
UB 2270 DIM MOVE$(32):MOVE$="hh▖▜h▖▜h▖▜h▖
   ▖▜┤■♥▜▜▖▜▜▜▜▜▜▜▜▜◆":MOVE=USR(ADR(MOV
   E$),CHSET,57344)
PA 2280 FOR C=1 TO 6:READ CH:FOR X=0 TO 7
   :READ D:POKE CHSET+CH*8+X,D:NEXT X:NEX
   T C
BY 2290 DATA 70,20,105,125,105,85,105,190
   ,130
CQ 2300 DATA 82,0,0,0,17,68,17,0,0
PA 2310 DATA 84,0,60,255,215,223,255,255,
   60
PY 2320 DATA 89,0,40,146,40,81,40,146,40
PF 2330 DATA 96,0,65,60,105,125,105,60,65
EF 2340 DATA 124,4,16,4,16,4,16,4,16
DQ 2350 DIM DIRX(15),DIRY(15),FINDCHAR$(8
   0):PX=20:PY=12:INC=2:EX=3:EY=5:DX=1:DY
   =1:FX=2:FY=2
DR 2360 FINDCHAR$="hh▖▜h▖ ▜▜▜┴i(▖▜▜▜i♥▖▜▜
   ♥▜■♥▜▜▜▜T▜↓@&▜▜▜▜▜┴i(▖▜▜▜i♥▖▜▜▜ ▜▜▜♥▖▜▖
   ▜◆▜T▖▜▖▜◆"
IF 2370 FOR X=1 TO 15:READ D:DIRX(X)=D:NE
   XT X:DATA 0,0,0,0,0,0,1,0,0,0,-1,0,0,0
   ,0
JY 2380 FOR X=1 TO 15:READ D:DIRY(X)=D:NE
   XT X:DATA 0,0,0,0,0,0,0,0,0,0,0,0,1,-1
   ,0
AI 2390 ? "▖":POKE 756,CHSET/256:POKE DL+
   10,4:POKE DL+12,4
LB 2400 P88=PEEK(88):P89=PEEK(89):POKE 88
   ,0:POKE 89,6:POSITION 0,0:? "◘":POKE 8
   8,P88:POKE 89,P89
KG 2410 FOR C=708 TO 712:READ COL:POKE C,
   COL:NEXT C:RETURN :DATA 102,172,230,74
   ,0
JF 2450 FOR I=1 TO 8:FOR J=-15 TO 15 STEP
    9-I:F=15-ABS(J):SOUND 2,202,10,F:SOUN
   D 1,152,10,F:SOUND 3,241+J,10,9
MC 2460 SETCOLOR 4,0,F:NEXT J:GOSUB 1880:
   NEXT I:VP=0
NB 2470 GOSUB 2070:GUY=GUY+1:POKE 1536+GU
   Y-2,ASC("◘"):COLOR 32:PLOT PX,PY:PX=20
   :PY=12
KM 2480 COLOR 20:SCREEN=SCREEN+1:IF SCREE
   N>6 THEN SCREEN=6:REM IF YOU MAKE EXTR
   A SCREENS, CHANGE THE 6 TO NEW NO.
LE 2490 ON SCREEN GOSUB 2520,2550,2590,26
   30,2680,2710
CB 2500 COLOR ASC("◘"):PLOT PX,PY:RETURN
ZZ 2510 REM SCREEN 1
BE 2520 FOR Y=1 TO 22:PLOT 1,Y:DRAWTO 38,
   Y:NEXT Y:COLOR 32:FOR Y=2 TO 9:PLOT 2,
   Y:DRAWTO 37,Y:NEXT Y
UN 2530 FOR X=2 TO 36 STEP 2:PLOT X,15:DR
   AWTO X,21:NEXT X:RETURN
AZ 2540 REM SCREEN 2
FP 2550 PLOT 1,1:DRAWTO 38,1:DRAWTO 38,22
   :DRAWTO 1,22:DRAWTO 1,1
JW 2560 FOR X=5 TO 30 STEP 5:PLOT X,12:DR
   AWTO X+4,3:DRAWTO X+4,21:DRAWTO X,12:N
   EXT X
BF 2570 RETURN
CC 2580 REM SCREEN 3
UP 2590 FOR X=19 TO 20:PLOT X,3:DRAWTO X,
   20:NEXT X:FOR X=16 TO 17:PLOT X,3:DRAW
   TO X,12:DRAWTO X-8,20
GH 2600 PLOT 39-X,3:DRAWTO 39-X,12:DRAWTO
    39-(X-8),20:NEXT X:PLOT 1,1:DRAWTO 38
   ,1:DRAWTO 38,22:DRAWTO 1,22
OF 2610 DRAWTO 1,1:RETURN
CD 2620 REM SCREEN 4
BO 2630 PLOT 6,11:DRAWTO 7,10:DRAWTO 4,7:
   DRAWTO 7,7:DRAWTO 10,8:DRAWTO 15,10:DR
   AWTO 30,10:DRAWTO 36,11
OH 2640 PLOT 6,12:DRAWTO 7,13:DRAWTO 4,16
   :DRAWTO 7,16:DRAWTO 10,15:DRAWTO 15,13
   :DRAWTO 30,13:DRAWTO 36,12
FJ 2650 PLOT 1,1:DRAWTO 38,1:DRAWTO 38,22
   :DRAWTO 1,22:DRAWTO 1,1:PLOT 14,4:DRAW
   TO 29,19:PLOT 14,19:DRAWTO 29,4
BE 2660 RETURN
DJ 2670 REM SCREEN 5
UB 2680 FOR Y=1 TO 11 STEP 2:PLOT Y,Y:DRA
   WTO 39-Y,Y:DRAWTO 39-Y,23-Y:DRAWTO Y,2
   3-Y:DRAWTO Y,Y
OF 2690 NEXT Y:RETURN
DH 2700 REM SCREEN 6
FH 2710 PLOT 1,1:DRAWTO 38,1:DRAWTO 38,22
   :DRAWTO 1,22:DRAWTO 1,1
WY 2720 PLOT 19,11:DRAWTO 25,11:DRAWTO 27
   ,9:DRAWTO 19,9:DRAWTO 19,13:DRAWTO 27,
   13:DRAWTO 25,11
MA 2730 PLOT 19,8:DRAWTO 19,3:DRAWTO 12,6
   :DRAWTO 8,11:DRAWTO 12,15:DRAWTO 19,19
   :DRAWTO 19,15
```

```
RP 2740 DRAWTO 14,11:DRAWTO 19,7:PLOT 28,
   3:DRAWTO 9,20:PLOT 28,20:DRAWTO 9,3:RE
   TURN
```

LISTING 2

```
ID 10 REM WIREBALL LINE MAKER
NU 20 REM BY JEAN GOULET
AO 30 REM (c) 1985, ANTIC PUBLISHING INC.

MX 3000 REM CREATES LINE 2270
JT 3010 ? "2270 DIM MOVE$(32):MOVE$=";CHR
   $(34);:RESTORE 3030
YC 3020 READ D:IF D<>-1 THEN ? CHR$(D);:G
   OTO 3020
OX 3030 DATA 104,104,133,215,104,133,214,
   104,133,213,104,133,212,162,4,160,0,17
   7,212,145,214,200,208,249,230,213,230
OH 3035 DATA 215,202,208,240,96,-1
MY 3040 ? CHR$(34);":MOVE=USR(ADR(MOVE$),
   CHSET,57344)":END
MY 3100 REM CREATES LINE 2360
YA 3110 ? "2360 FINDCHAR$=";CHR$(34);:RES
   TORE 3130:POKE 766,1
ZW 3120 READ D:IF D<>-1 THEN ? CHR$(D);:G
   OTO 3120
TX 3125 POKE 766,0:END
UQ 3130 DATA 104,104,133,204,104,133,203,
   216,165,203,24,105,40,133,203,165,204,
   105,0,133,204,162,0,232,160,0,200,177
XF 3140 DATA 203,201,84,240,29,192,38,208
   ,245,216,165,203,24,105,40,133,203,165
   ,204,105,0,133,204,224,22,208,224,169
HH 3150 DATA 0,133,212,133,213,96,169,84,
   133,212,133,213,96,-1
```

last-minute gift help online

SYSOP SANTA CLAUS

Article on page 12

LISTING 1

Don't type the TYPO II Codes!

```
YH 10 REM SYSOP SANTA
NH 20 REM BY SCOTT ANTHONY AND BILL MARQU
   ARDT
FW 30 REM (c) 1985, ANTIC PUBLISHING
GV 50 DIM F$(15):F$="D1:GIFTS.DAT"
UD 60 DIM CD$(4),CL$(1),S$(1)
ZK 70 DIM CODE$(4),DES$(80),P$(15),SO$(40
   )
XQ 90 CL$=CHR$(125):S$=CHR$(160)
FP 95 POKE 712,148:POKE 710,148
AI 100 PRINT CL$:RESTORE :POKE 82,0:POKE
   752,1:GOSUB 10000:TRAP 9400
UU 110 ? CHR$(125):POSITION 4,7:? "What i
   s the age"
GP 111 POSITION 7,9:? "of the person"
XG 112 POSITION 10,11:? "you are giving t
   o "
XL 113 POSITION 13,13:? "(infants are age
    0) ";:INPUT AGE
PI 120 IF AGE<0 OR AGE>100 THEN 110
CB 130 A=1+(AGE>21)+(AGE>15)+(AGE>12)+(AG
   E>9)+(AGE>5)+(AGE>2):B=0:C=B:D=B
FF 135 ? CL$:GOSUB 9300:POKE 82,7
TO 140 ON A GOSUB 1000,2000,3000,4000,500
   0,6000,7000
HO 150 POKE 82,0
LN 970 CD$(1,1)=STR$(A):CD$(2,2)=STR$(B):
   CD$(3,3)=STR$(C):CD$(4,4)=STR$(D)
AY 980 ? CL$:GOTO 9000
PP 997 REM AGE CATEGORY MENUS
ZB 1000 POSITION 11,3:? "Infants to 2 yea
   rs":?
NO 1020 ? "1 - Clothes":? "2 - Toys":? "3
    - Helpful things"
AT 1021 ? "    for Mom & Dad":CC=3:GOSUB
   12120
TF 1050 B=K:RETURN
BH 2000 POSITION 9,3:? "Pre-Schoolers (3-
   5 years)":?
ZA 2020 ? "1 - Books":? "2 - Toys":? "3 -
    Software"
XO 2021 ? "4 - Clothes":? "5 - Dolls & St
   uffed Animals":? "6 - Games":CC=6:GOSU
   B 12120
TG 2050 B=K:RETURN
FN 3000 POSITION 15,3:? "Ages 6-9":?
ZB 3020 ? "1 - Books":? "2 - Toys":? "3 -
    Software"
GY 3021 ? "4 - Dolls":? "5 - Games":? "6
   - Sports Equipment":CC=6:GOSUB 12120
TH 3050 B=K:RETURN
QY 4000 POSITION 14,3:? "Ages 10-12":?
WM 4020 ? "1 - Books":? "2 - Games":? "3
   - Software"
YH 4021 ? "4 - Sports Equipment":? "5 - H
   obbies":? "6 - Records/AV/Cassetes":CC
   =6:GOSUB 12120
TI 4050 B=K:RETURN
ET 5000 POSITION 7,3:? "Junior High (Ages
    13-15)":?
IJ 5020 ? "1 - Books":? "2 - Software":?
   "3 - Sports Equipment"
UF 5021 ? "4 - Hobbies":? "5 - Entertainm
   ent":? "6 - Records/AV/Cassettes"
UT 5022 ? "7 - Clothes for girls":? "8 -
   Clothes for boys":CC=8:GOSUB 12120
TJ 5050 B=K:RETURN
IV 6000 POSITION 2,3:? "High School & Col
   lege (Ages 16-21)":?
IK 6020 ? "1 - Books":? "2 - Software":?
   "3 - Sports Equipment"
ZD 6021 ? "4 - Hobbies":? "5 - College Re
   lated Materials":? "6 - Records/AV/Cas
   setes"
KL 6030 ? "7 - Clothes for Females":? "8
   - Clothes for Males":CC=8:GOSUB 12120
TK 6050 B=K:RETURN
KY 7000 POSITION 16,3:? "Adults":?
EY 7020 ? "1 - The Arts":? "2 - Sports &
   Fitness":? "3 - Entertainment"
XN 7021 ? "4 - Computing":? "5 - Repair &
   Home Crafts":? "6 - Collecting"
PI 7022 ? "7 - Fashion & Style":CC=7:GOSU
   B 12120
NC 7025 POKE 82,0:? CL$:GOSUB 9300:POKE 8
   2,7
KN 7030 B=K:ON B GOTO 7100,7200,7300,7400
   ,7500,7600,7700
```

continued on next page

```
CG 7100 POSITION 13,3:? "The Arts":?
QR 7120 ? "1 - Music Performance":? "2 - Music Listening":? "3 - Arts & Crafts"
XR 7121 ? "4 - Art Appreciation":CC=4:GOSUB 12120
OI 7130 POKE 82,0:? CL$:GOSUB 9300:POKE 82,7:C=K:ON C GOTO 7140,7150,7160,7170
VV 7140 POSITION 9,3:? "Music - Performance":?
XP 7142 ? "1 - Stringed Instruments":? "2 - Piano":? "3 - Wind Instruments"
NU 7143 ? "4 - Percussion":? "5 - Electronic":CC=5:GOSUB 12120:GOTO 7900
TK 7150 POSITION 10,3:? "Music - Listening":?
CO 7152 ? "1 - Classical":? "2 - Pop":? "3 - Jazz":? "4 - Rock"
OM 7153 ? "5 - Country Western":CC=5:GOSUB 12120:GOTO 7900
CB 7160 POSITION 12,3:? "Arts & Crafts":?
YJ 7162 ? "1 - Painting":? "2 - Sculpting":? "3 - Wood Carving"
JY 7163 ? "4 - Photography":? "5 - Ceramics":? "6 - Drawing"
UJ 7164 ? "7 - Needlecrafts":? "8 - Miniatures":CC=8:GOSUB 12120:GOTO 7900
BC 7170 RETURN
HI 7200 POSITION 11,3:? "Sports & Fitness":?
XT 7220 ? "1 - Fitness":? "2 - Team & Competitive Sports":? "3 - Outdoor Sports"
YU 7221 ? "4 - Spectator Sports":CC=4:GOSUB 12120
YM 7230 POKE 82,0:? CL$:GOSUB 9300:POKE 82,7:C=K:ON C GOTO 7240,7250,7260,7270
JR 7240 POSITION 15,3:? "Fitness":?
GF 7242 ? "1 - Weight Lifting":? "2 - Aerobics":? "3 - Nutrition"
JR 7243 ? "4 - Jogging":? "5 - Walking":? "6 - Swimming":CC=6:GOSUB 12120:GOTO 7900
SB 7250 POSITION 7,3:? "Team & Competitive Sports":?
XR 7252 ? "1 - Volleyball":? "2 - Tennis":? "3 - Squash/Racquetball"
XS 7253 ? "4 - Golf":? "5 - Bowling":? "6 - Baseball"
CG 7254 ? "7 - Football":? "8 - Basketball":? "9 - Hockey":CC=9:GOSUB 12120:GOTO 7900
GW 7260 POSITION 12,3:? "Outdoor Sports":?
UM 7262 ? "1 - Hunting":? "2 - Fishing":? "3 - Hiking"
EJ 7263 ? "4 - Bicycling":? "5 - Boating":? "6 - Skiing":CC=6:GOSUB 12120:GOTO 7900
BE 7270 RETURN
PS 7300 POSITION 13,3:? "Entertainment":?
LP 7320 ? "1 - Eating & Drinking":? "2 - Puzzles & Games":? "3 - Movies/Theatre"
UH 7321 ? "4 - Reading":? "5 - Travel":CC=5:GOSUB 12120
QZ 7330 POKE 82,0:? CL$:GOSUB 9300:POKE 82,7:C=K:ON C GOTO 7340,7350,7360,7370,7380
WC 7340 POSITION 11,3:? "Eating & Drinking":?
IV 7342 ? "1 - Dining Out":? "2 - Dining In":? "3 - Bar Utensils"
CA 7343 ? "4 - Beverages":? "5 - Favorite Foods":? "6 - Parties"
GZ 7344 ? "7 - Barbecues & Picnics":CC=7:GOSUB 12120:GOTO 7900
QK 7350 POSITION 12,3:? "Puzzles & Games":?
RE 7352 ? "1 - Board Games":? "2 - Card Games":? "3 - Pencil Games"
BU 7353 ? "4 - Jigsaw Puzzles":? "5 - Puzzle Toys":? "6 - Magic Tricks"
ZX 7354 ? "7 - Fantasy/Role Playing:CC=7:GOSUB 12120:GOTO 7900"
BD 7360 RETURN
AD 7370 POSITION 15,3:? "Reading":?
EI 7372 ? "1 - Fiction":? "2 - Non-fiction":? "3 - Poetry"
CQ 7373 ? "4 - Politics & History":? "5 - Mysteries":? "6 - Periodicals"
XR 7374 ? "7 - Science Fiction":? "8 - Biography":? "9 - Classics":CC=9:GOSUB 12120:GOTO 7900
BJ 7380 RETURN
NG 7400 POSITION 11,3:? "Computing":?
NM 7420 ? "1 - Hardware":? "2 - Games":? "3 - Productivity"
EN 7421 ? "4 - Languages":? "5 - Other Software":? "6 - Incidentals":CC=6:GOSUB 12120
YG 7430 C=K:GOTO 7900
MV 7500 POSITION 9,3:? "Repair & Home Crafts":?
BY 7520 ? "1 - Cooking":? "2 - Maintenance & Repair":? "3 - Gardening"
ON 7521 ? "4 - Decorating":CC=4:GOSUB 12120
CY 7530 POKE 82,0:? CL$:GOSUB 9300:POKE 82,7:C=K:ON C GOTO 7540,7550,7560,7570
QJ 7540 POSITION 15,3:? "Cooking":?
HA 7542 ? "1 - Cookbooks":? "2 - Utensils":? "3 - Table Items"
OH 7543 ? "4 - Pots & Pans":? "5 - Appliances":? "6 - Condiments"
SO 7544 ? "7 - Staples":CC=7:GOSUB 12120:GOTO 7900
NK 7550 POSITION 9,3:? "Repair & Home Crafts":?
LR 7552 ? "1 - Carpentry":? "2 - Plumbing":? "3 - Auto Mechanics"
KF 7553 ? "4 - Electrical":? "5 - Painting":? "6 - Cleaning ":CC=6:GOSUB 12120:GOTO 7900
CF 7560 POSITION 14,3:? "Gardening":?
NI 7562 ? "1 - Clothing":? "2 - Tools":? "3 - Plants & Seeds"
KG 7563 ? "4 - Soil Conditioners":? "5 - Decorative Items":? "6 - Books":CC=6:GOSUB 12120:GOTO 7900
BK 7570 RETURN
SY 7600 POSITION 14,3:? "Collecting":?
EX 7620 ? "1 - Coins":? "2 - Stamps":? "3 - Antiques"
EE 7621 ? "4 - Baseball Cards":CC=4:GOSUB 12120
YK 7630 C=K:GOTO 7900
LO 7700 POSITION 11,3:? "Fashion & Style":?
JN 7720 ? "1 - Sewing":? "2 - Cosmetics":? "3 - Fragrances for":? "     Men & Women"
IN 7721 ? "4 - Men's casual Clothes":? "5 - Women's Casual Clothes":? "6 - Women's Accessories"
RP 7730 ? "7 - Men's Accessories":? "8 - Magazines & Books":CC=8:GOSUB 12120:C=K
UA 7900 D=K:RETURN
CL 9000 GOSUB 9500:V=4:? CL$:? "List of Suggestions:"
ZB 9010 INPUT #1;CODE$
YU 9011 IF CODE$=CD$ THEN GOSUB 13000:GOTO 9030
JF 9020 INPUT #1;DES$,P$,SO$
UV 9030 IF V=18 THEN GOSUB 13100
ZW 9040 POKE 764,255:GOTO 9010
```

```
RQ 9300 GOSUB 12020:GOSUB 12030:GOSUB 120
   20:RETURN
CO 9400 CLOSE #1:TRAP 40000
AK 9410 POSITION 5,23:? "That's all! Pres
   s any key . . .";:POKE 764,255
EV 9411 IF PEEK(764)=255 THEN 9411
NT 9412 GOTO 100
HO 9500 OPEN #1,4,0,F$
BA 9530 RETURN
LR 10000 FOR L=1 TO 17:READ S,N:POSITION
   S,L:FOR H=1 TO N:? "*";:NEXT H:NEXT L
QU 10001 FOR L=18 TO 19:READ S,N:POSITION
    S,L:FOR H=1 TO N:? S$;:NEXT H:NEXT L
UN 10010 DATA 10,1,9,3,8,5,6,9,7,7,6,9,4,
   13,6,9,5,11,3,15,5,12,4,14,2,18,4,14,3
   ,16,2,18,1,20,9,3,8,5
ZT 10020 FOR N=1 TO 22:READ V,H:POSITION
   H,V:? "•":NEXT N
LE 10030 DATA 1,10,3,8,4,12,5,8,6,11,7,6,
   7,15,8,12,9,8,10,5,10,14,11,10,12,4
DE 10031 DATA 12,16,13,9,14,5,14,14,15,10
   ,16,3,16,16,17,6,17,19
GY 10040 POSITION 0,20:GOSUB 12020
LJ 10050 POSITION 23,4:? "GIFT SELECTION"

BK 10051 POSITION 27,5:? "HELPER"
BD 10052 ? :POSITION 23,8:? "for readers
   of"
HI 10053 ? :POSITION 23,10:? "ANTIC Magaz
   ine"
EM 10060 POSITION 21,2:FOR N=1 TO 18:? S$
   ;:NEXT N
NA 10061 FOR V=3 TO 12:POSITION 21,V:? S$
   ;:POSITION 38,V:? S$;:NEXT V
DE 10062 POSITION 21,13:FOR N=1 TO 18:? S
   $;:NEXT N
KH 10070 GOSUB 12140:RETURN
RD 12020 FOR N=0 TO 39:? S$;:NEXT N:RETUR
   N
SS 12030 FOR L=1 TO 19:POSITION 0,L:? S$;
   :POSITION 39,L:? S$;:NEXT L:RETURN
UA 12120 POKE 764,255:POSITION 7,22:? "Pr
   ess number of choice ";:OPEN #2,4,0,"K
   :":GET #2,K
AF 12125 K=K-48:CLOSE #2:IF K<1 OR K>CC T
   HEN 12120
EV 12127 RETURN
BW 12140 POKE 764,255:POSITION 4,23:? "Pr
   ess any key to continue . . .";
XW 12141 IF PEEK(764)=255 THEN 12141
IX 12145 POKE 764,255:RETURN
YJ 13000 INPUT #1;DES$,P$,SO$:POSITION 0,
   V
PS 13010 ? DES$:POSITION 21,V:? P$
CB 13020 POSITION (39-LEN(SO$)),V:? SO$:V
   =V+1
DP 13030 RETURN
WY 13100 POSITION 5,23:? "Press any Key t
   o continue . . .";
YS 13110 V=4:POKE 764,255
UW 13120 IF PEEK(764)=255 THEN 13120
HJ 13130 ? CL$:? "List continued . . ."
DW 13140 RETURN
```

ST FONT LOADER

Article on page 48

LISTING 1

```
/*
 * ST/FONT!  Ver. 100285
 * file: B:ACFONT.C
 * (c) 1985 Antic Publishing
 * Written by Patrick Bass
 *
 * The purpose of this program is to access character fonts from an
 * 8-bit Atari and display them from within the 520ST.
 *
 */

#include "obdefs.h"
#include "define.h"
#include "gemdefs.h"
#include "osbind.h"

extern int      gl_apid;

int      gl_hchar, gl_wchar, gl_wbox, gl_hbox,
         menu_id, phys_handle, handle, file_handle, wi_handle, top_window,
         xdesk, ydesk, hdesk, wdesk, xold, yold, hold, wold,
         xwork, ywork, hwork, wwork,
         msgbuff[8], keycode, ret,
         i, j, k, l, done, button,
         contrl[12], intin[128], ptsin[128], intout[128], ptsout[128],
         work_in[11], work_out[57];

char     file_buffer[32768], path[]="a:*.FNT\0", file_name[]="new      .fnt\0",
         alert0[]="[1][ ST/FONT  v.100285 | A Fontable Accessory | (c)1985 Antic P
ublishing | written by Patrick Bass ][ Perform ]",
         alert1[]="[3][ Place Fonts in Drive A: ][ Read Disk ]",
         alert2[]="[3][ Thanks for using | ST/FONT! v.100285 | | By Patrick Bass ]
[ Exit ]";

long     max_len=32768,
         char8x8=0x00018006,
         char8x16=0x00018a62,
         number, source_char;


/*-------------------------------------------------------------------------*/
main()
{
         appl_init();
         phys_handle=graf_handle( &gl_wchar, &gl_hchar, &gl_wbox, &gl_hbox );
         menu_id=menu_register( gl_apid," ST Font Loader " );
         wind_get( 0, WF_WORKXYWH, &xdesk, &ydesk, &wdesk, &hdesk);

         wi_handle=(-1);

         fontable();
}

/*-------------------------------------------------------------------------*/
open_vwork()
{
int i;
         for( i=0; i<10; work_in[i++]=1 ); work_in[10]=2;
         handle=phys_handle;
         v_opnvwk( work_in, &handle, work_out );
}

/*-------------------------------------------------------------------------*/
set_clip( x, y, w, h )
```

```
int x, y, w, h;
{
int clip[4];
        clip[0]=x; clip[1]=y; clip[2]=x+w; clip[3]=y+h;
        vs_clip( handle, 1, clip );
}

/*-----------------------------------------------------------------------*/
open_window()
{
        wi_handle=wind_create( NAME, (xdesk+wdesk)/4, (ydesk+hdesk)/4,
                                     wdesk/2, hdesk/2 );
        wind_set( wi_handle, WF_NAME," ST/FONT! ", 0, 0 );
        graf_growbox( 10, 10, 10, 10,
                (xdesk+wdesk)/4, (ydesk+hdesk)/4, wdesk/2, hdesk/2 );
        wind_open( wi_handle, (xdesk+wdesk)/4, (ydesk+hdesk)/4,
                                 wdesk/2, hdesk/2 );
        wind_get( wi_handle, WF_WORKXYWH, &xwork, &ywork, &wwork, &hwork );
}

/*-----------------------------------------------------------------------*/
do_redraw( xc, yc, wc, hc )
int xc, yc, wc, hc;
{
GRECT t1, t2;

        wind_update( TRUE );
        t2.g_x=xc; t2.g_y=yc; t2.g_w=wc; t2.g_h=hc;
        wind_get( wi_handle, WF_FIRSTXYWH, &t1.g_x, &t1.g_y, &t1.g_w, &t1.g_h );

        while ( t1.g_w && t1.g_h ) {
                if ( rc_intersect( &t2, &t1 ) ){
                        set_clip( t1.g_x, t1.g_y, t1.g_w, t1.g_h );
                        do_font();
                }
        wind_get( wi_handle, WF_NEXTXYWH, &t1.g_x, &t1.g_y, &t1.g_w, &t1.g_h );
        }
        wind_update( FALSE );
}

/*-----------------------------------------------------------------------*/
fontable()
{
int event;

      while (TRUE) {
        event = evnt_multi( MU_MESAG,
                        1, 1, ret,
                        0, 0, 0, 0, 0,
                        0, 0, 0, 0, 0,
                        msgbuff, 0, 0, &ret, &ret, &ret, &ret, &ret, &ret );

        wind_update( TRUE );

        if ( event & MU_MESAG )
          switch ( msgbuff[0] ) {


          case WM_REDRAW:
            if ( msgbuff[3] == wi_handle )
                 do_redraw( msgbuff[4], msgbuff[5], msgbuff[6], msgbuff[7] );
          break;


          case AC_OPEN:
            if ( msgbuff[4] == menu_id ) {
                 if( wi_handle == (-1) )
                    { open_vwork(); open_window(); }
                 else wind_set( wi_handle, WF_TOP, 0, 0, 0, 0 );
            }
          break;


          case AC_CLOSE:
            if( ( msgbuff[3] == menu_id ) && ( wi_handle != (-1) ) )
                { v_clsvwk(handle); wi_handle = (-1); }
          break;
```

continued on next page

```
        } /* end switch */

        wind_update( FALSE );

    } /* end while */

}

/*------------------------------------------------------------------------*/
do_font()
{
        clear_window();

        form_alert( 1, alert0 );
        for( i=0; i<9000; i++ );
        form_alert( 1, alert1 );
        fsel_input( path, file_name, &button );

        if( button != 0 ){

            graf_mouse( M_OFF, 0x0L );
            clear_window();

            file_handle=Fopen( file_name, 0 );

            if( file_handle > (-1) ){

                done=Fread( file_handle, max_len, file_buffer );
                bios( 38, configure() );
            }
            Fclose( file_handle );
            graf_mouse( M_ON, 0x0L );
        }
        clear_window();
        form_alert( 1, alert2 );

        wind_close( wi_handle );
        graf_shrinkbox( 10, 10, 10, 10,
                    (xdesk+wdesk)/4, (ydesk+hdesk)/4, wdesk/2, hdesk/2 );
        wind_delete( wi_handle );

        msgbuff[0]=AC_CLOSE;
        msgbuff[3]=menu_id;
        wi_handle=(-1);
}

/*------------------------------------------------------------------------*/
clear_window()
{
int     temp[4];
        vsf_interior( handle, 2 );
        vsf_style( handle, 8 );
        vsf_color( handle, 0 );
        temp[0]=xdesk;
        temp[1]=ydesk;
        temp[2]=xdesk+wdesk;
        temp[3]=ydesk+hdesk;
        v_bar( handle, temp );
}

/*------------------------------------------------------------------------*/
configure()
{
char *point1, *point2;

      for( i=0; i<128; i++ ){

          l=i;
          if( i<32 ) l=l+64;
          if( i>31 & i<96 ) l=l-32;

          for( j=0; j<16; j++ ){

             source_char=( l*8 )+( j/2 );

             point1=( char8x8+( j*128 ))+i;
             point2=( char8x16+( j*256 ))+i;
```

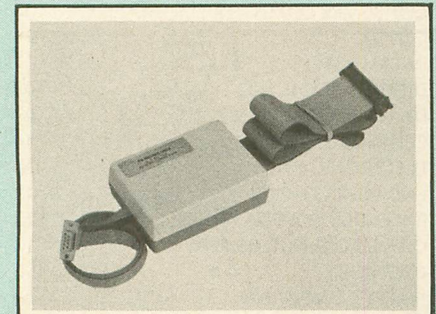
```
        *(point1)=file_buffer[ source_char ];
        *(point2)=file_buffer[ source_char ];
      }
    }
}
```

new products

BOMBER/EVADER

(game)
Pro*Mega Software
29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317
32K disk
$14.95

A double play game package. In **Bomber**, destroy an enemy plane with your ship. In **Evader**, land your Lunar Lander in the Forgotten City.



PST-8B INTERFACE

(printer interface)
PS Technologies
P.O. Box 1335
Palatine, IL 60078
(312) 359-7302
$39.95

Parallel printer interface described as compatible with all software. For the XL series, includes a replacement ROM operating system chip with a built-in translator. For the 400/800 series, a revision B operating system chip is included.

ACE 80

(expansion cartridge)
TNT Computing
P.O. Box 443
Holt, MI 48842
(517) 394-2412
$49.95, 48K cartridge

According to the manufacturer, this 80-column cartridge "produces 80 remarkably legible characters" on black and white or color TVs and monitors. Works with **Letter Perfect** and most BASIC programs on all Atari computers.

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RACING HANDICAPPER

(software)
Software Exchange
2681 Peterboro Road
P.O. Box 5382
W. Bloomfield, MI 48033
(313) 626–7208
$29.95
48K, disk or cassette

This package contains three programs for the calculating punter: Thoroughbred Racing Analysis, Harness Racing Analysis and Bet Return Analysis. All three programs require a minimum of data entry, and the results of the first two may be printed for extra convenience.

ASSEMBLER AND LINKER

(development software)
Six Forks Software
11009 Harness Circle
Raleigh, NC 27614
(919) 847-2740
$39, 48K disk

Although unfamiliar to many home computer programmers, all major computer systems (including UNIX and CP/M-based systems) have linker-based development systems. Assembler/Linker provides Atari users with this industry standard by creating multiple relocatable files which can be linked into a final, executable object code.

TEACHER'S PET

(software)
Someplace Special Software
11 Woodland Drive
Troy, PA 16497
(717) 297-2039
$50, 48K disk

This program helps teachers computerize grade curves, test scoring and student reports for classrooms of up to 30 students.

POWER STAR

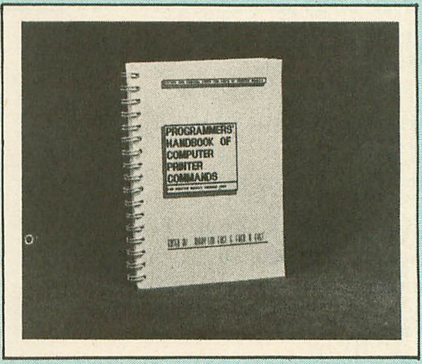
(game)
Pandora Software
177 Carlton Lane
N. Andover, MA 01845
(617) 681-8440
$39.95, 16K Cartridge

Go north, south, east or west. This graphic adventure's claim to uniqueness is 360 degrees of different viewpoints, showing 63 locations in 200 possible views.

TOP-DOS 1.5

(operating software)
Eclipse Software
1058 Marigold Court
Sunnyvale, CA 94086
(408) 246-8325
$29.95

This new improved version of **Top-DOS** disk operating system is also $20 cheaper. Supports 130XE, automatic formatting, four-level command file nesting, 90K buffer for one-pass disk duplication.



COMPUTER PRINTER COMMANDS

(book)
Cardinal Point Inc.
P.O. Box 596
Elletsville, Indiana 47429
(812) 876-7811
$37.95

Programmers can expand the marketability of their software with this 270-page reference book of the Escape and Control programming codes for 170 different daisy wheel and dot matrix printers.

continued on next page

new products

COIN COLLECTOR, PHOTO COLLECTOR

(software)
J.V. Technologies
P.O. Box 563
Ludington, MI 49431
(616) 843-9512
48K disk
$22.95 each, $40 for both

Menu-driven inventory software for coin and photo hobbyists. Each program catalogs up to 300 collectibles in an easily accessed database.

BATTALION COMMANDER

(strategy game)
Strategic Simulations Inc.
883 Stierlin Road, Bldg. A-200
Mountain View, CA 94043
(415) 964-1353
$39.95, 48K disk

A strategy wargame with five scenarios, 40 terrain maps, and adjustable opposing forces (choose from U.S., Soviet, or Chinese).

ACROJET

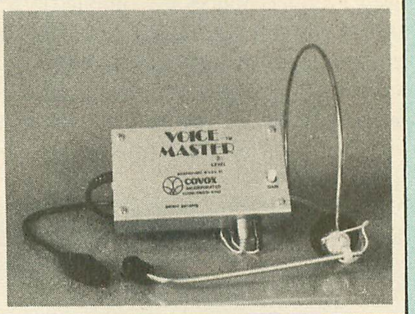
(game)
Microprose
120 Lakefront Drive
Hunt Valley, MD 21030
(301) 667-1151.
$34.95, 48K disk

The successor to **Solo Flight**, this advanced jet flight simulator features built-in CRT instrument displays and acrobatic stunts.

TARGETS

(educational software)
Sunburst Communications, Inc.
39 Washington Avenue
Pleasantville, NY 10570
(800) 431-1934
(914) 769-5030 in New York
$50 with backup and guide
48K disk

Targets is an educational game, designed for practising basic math operations and analytical problem solving. Players target large numbers and try to equal them with combinations of smaller numbers.



COVOX VOICE MASTER

(hardware and software)
Covox, Inc.
675-D Conger Street
Eugene, OR 97402
(503) 342-1271
$89.95, 48K disk

This digital speech recording/playback system brings voice recognition, a speech synthesizer and music composing capabilities to the Atari at low cost. Comes with a microphone/earphone headset and software.

KARATEKA, CHAMPIONSHIP LODE RUNNER

(games)
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170.
$34.95 each, 48K disk

Due to "enormous Atari consumer response," Broderbund converted these games to the Atari. **Karateka**, an animated "action movie" game with realistic sound, chronicles a karate master's fight to rescue his bride. **Championship Lode Runner** is described as a more intricate, advanced version of **Lode Runner**.

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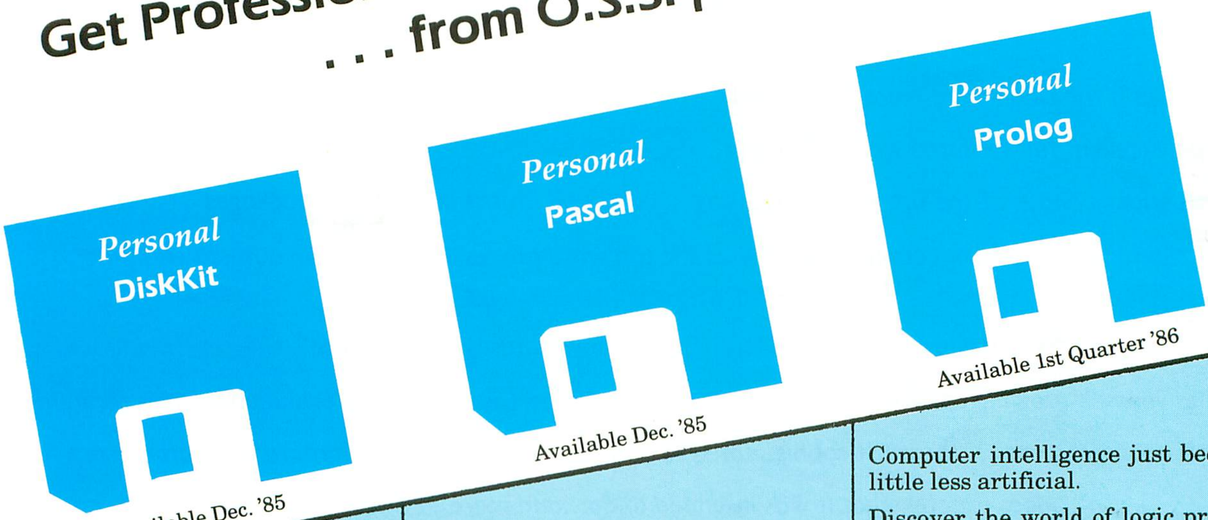
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